Information in practice

Reliability of health information for the public on the world wide web: systematic survey of advice on managing fever in children at home

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Abstract

Objective: To assess the reliability of healthcare information on the world wide web and therefore how it may help lay people cope with common health problems.

Methods: Systematic search by means of two search engines, Yahoo and Excite, of parent oriented web pages relating to home management of feverish children. Reliability of information on the web sites was checked by comparison with published guidelines.

Main outcome measures: Minimum temperature of child that should be considered as fever, optimal sites for measuring temperature, pharmacological and physical treatment of fever, conditions that may warrant a doctor's visit.

Results: 41 web pages were retrieved and considered. 28 web pages gave a temperature above which a child is feverish; 26 pages indicated the optimal site for taking temperature, most recommending rectal measurement; 31 of the 34 pages that mentioned drug treatment recommended paracetamol as an antipyretic; 38 pages recommended non-drug measures, most commonly tepid sponging, dressing lightly, and increasing fluid intake; and 36 pages gave some indication of when a doctor should be called. Only four web pages adhered closely to the main recommendations in the guidelines. The largest deviations were in sponging procedures and how to take a child's temperature, whereas there was a general agreement in the use of paracetamol.

Conclusions: Only a few web sites provided complete and accurate information for this common and widely discussed condition. This suggests an urgent need to check public oriented healthcare information on the internet for accuracy, completeness, and consistency.

Introduction

The rapid growth of computer based electronic communication and the shift toward giving patients more responsibility for their healthcare decisions are likely to induce cultural changes in the delivery of care.[1 2] Until recently, it was extremely difficult for lay people to search for healthcare information on the internet, but applications such as the world wide web are making it more accessible.[3-5] This changing nature of information distribution has important implications for health care: issues such as the quality of care, the validity and consistency of available information, and the effects on the doctor-patient relationship will be major concerns.[6 7]

Patient oriented medical information on the world wide web could provide healthcare professionals with the opportunity to learn more about patients' and relatives' concerns and to refer them to these sources of information when appropriate.[8] However, little has been done to assess, control, and assure the quality of this medical information. We therefore made a systematic search of parent oriented web pages relating to the home management of children with fever in order to assess the reliability of the information.

Fever is one of the most common medical problems experienced by children and is often caused by relatively harmless, self limiting viral diseases that are manageable by parents on their own.[9] However, parents' fear and misconceptions about fever often lead them to unnecessarily aggressive management and inappropriate calls to their doctor.[10] Parental education programmes on fever have been shown to decrease misuse of antipyretic drugs and requests for doctors to visit.[11-13] The availability of accurate information on the internet about the home management of the feverish child on the internet could thus be useful in counteracting parents' worries about fever and, more generally, in optimising healthcare delivery.

Methods

Literature search

In December 1996, we searched the world wide web with the browser Netscape Navigator (Netscape Communication Corporation, Mountain View, CA) and located relevant web sites by using the advanced search options (with boolean operators) of the search engines Yahoo[14] and Excite.[15] The set of keywords we entered into the query box were: "fever management" *and* "child" *and* "parent information." To find documents written in languages other than English, and thus reduce the language bias, we also entered the search terms in French, Spanish, Italian, and German.

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Literature assessment

We prepared a checklist to gather basic information on the web sites—such as the type of organisation that created the web site, the country it operates from, and the language in which the information was offered. We also considered more specific items relating to fever and its management:

- The minimum temperature considered as fever
- The optimal sites for measuring temperature
- Pharmacological and physical treatments of fever
- Conditions that may warrant a visit by a doctor.

To assess the reliability and completeness of the web sites, we compared their information with the guidelines to parents for managing fever at home supplied by El-Radhi and Carroll.[16] The main recommendations contained in these guidelines and considered in the analysis were:

- To take the child's temperature in the armpit
- To give paracetamol in a dose of 10-15 mg/kg every four hours
- For sponging, to use tepid water that feels neutral to the touch and to always give paracetamol before sponging
- To keep the child lightly dressed, offer fluids frequently, and discourage excessive activity
- To call a doctor if the child is less than 6 months old; has an underlying disease; seems unwell; or has symptoms such as pain, vomiting, headache, earache, excessive sleepiness, delirium, convulsion, breathlessness, persistent fever, or has had a temperature above 40°C on several occasions.

Statistical analysis

We performed data management and analysis with the Epi-Info (version 6.04b) software package.[17]

Results

Our computer search retrieved 41 web pages. Of these, 32 were developed by commercial ventures, and the remaining nine were produced by individual practitioners, clinics, academic institutions, or other organisations with educational purposes. Most of the web pages (31) were created by centres in the United States; centres in Canada, the next most frequent source, created three. English alone was used in 32 of the documents, English was used together with another language in six, Spanish was used in two, and Italian was used in one.

Twenty eight web pages gave a specific temperature above which a child is considered to have fever. This ranged from 37.4°C to 38.3°C for rectal measurement (mean 38°C (SD 0.2°C)), 37.4 to 37.8°C for oral measurement (37.6°C (0.2°C)), and 37.0 to 37.6°C for armpit measurement (37.2°C (0.2°C)).

Twenty six web pages indicated the optimal sites for measuring children's temperature. The rectal method was the most widely recommended independently of age, and forehead strips were the most discouraged (see table 1). Nine web pages explained the correct way to take a child's temperature. All of these described the rectal method, while the oral and axillary methods were described in six and five web pages respectively.

Of the 34 documents that mentioned drug treatment, paracetamol was recommended in 31, ibuprofen in 14, and dipyrone in one, while aspirin was recommended in three and discouraged in 22. Of the web pages that recommended paracetamol, eight suggested the dose, which ranged from 10 to 15 mg/kg at intervals of either four or six hours.

Table 1 Methods of measuring children's temperature mentioned in 41 sites on the world wide web that gave parent oriented information on home management of childhood fever

	No (%) of web pages	
Method	**Recommended**	**Discouraged**
Rectal	24 (59)	0
Oral	20 (49)	0
Axillary	16 (39)	2 (5)
Aural	9 (22)	2 (5)
Touching forehead	0	7 (17)
Forehead strip	0	12 (29)

Table 2 Non-drug treatments mentioned in 41 sites on the world wide web that gave parent oriented information on home management of childhood fever

	No (%) of web pages	
Treatment	**Recommended**	**Discouraged**
Extra fluid	23 (56)	0
Tepid sponging	22 (54)	1 (2)
Dressing lightly	22 (54)	0
Tepid bath or shower	9 (22)	0
Fanning	3 (7)	0
Cold sponging	2 (5)	9 (22)
Cold bath or shower	2 (5)	12 (29)
Sponging with alcohol	2 (5)	21 (51)
Dressing warmly	0	10 (24)

Non-drug remedies were indicated in 38 documents. Increasing the intake of fluids, tepid sponging, and dressing lightly were the most commonly recommended, while sponging with alcohol and bathing in cold water were the most discouraged (table 2). Of the 22 web pages that recommended tepid sponging, seven also specified the temperature above which to begin the treatment; this ranged from 38.5°C to 40.5°C. However, only six mentioned the importance of giving an antipyretic drug before sponging.

Thirty six web pages gave at least some indication of when parents should call a doctor. Twenty seven listed warning symptoms, of which the most common were convulsions, difficulty breathing, stiff neck, and difficulty in awakening. The age of a child below which parents should call a doctor was mentioned in 21 documents and ranged from 2 to 6 months (mean 3.5 months). The temperature and duration of fever above which a doctor's visit was advisable were reported in 15 and 18 documents respectively: the temperature ranged from 38°C to 41°C (mean 39.7°C), and the duration of fever from one to three days (mean 2.3).

Table 3 summarises the results of the comparison between the contents of the web pages and the guidelines chosen as the standard. Only four web pages adhered closely to the main recommendations listed in the guidelines. The largest deviations were in the sponging procedures (only six out of 41 adhered) and in the way the temperature should be taken (16/41), whereas there was general agreement in the use of paracetamol as the antipyretic of choice (31/41).

Discussion

This systematic search of web sites indicates that common medical problems, such as managing feverish children at home, are well represented on the internet. However, unlike in paper based journals, on the world wide web there is often no verification of validity—let alone peer review—of the information submitted. Difficulty in judging the validity of this information thus poses a problem for people using the internet.

Temperature measurement

As there is no consensus in every aspect of the home management of feverish children, we expected some inconsistency in the information the various documents contained. Thus, the temperature above which a child should be considered to have fever as well as the optimal site of temperature measurement were not uniform.

There is still disagreement on the optimal site of temperature measurement, and the choice depends partly on the aim of the measurement; usually, it is merely to establish the presence of fever and its approximate level.[18] Most of the web pages recommended rectal measurement. Some consider this method inappropriate for parents because of the risk of breaking the thermometer, rectal injury, and cross infections. These complications, however, have been overemphasised and are too rare for rectal measurement of temperature to be discouraged.[19 20] Only nine of the 24 web documents that recommended the rectal method also gave detailed instructions for taking temperature. Because parents are often reluctant to measure rectal temperature in their children, if they are to be encouraged to use this method more information is needed on the best way to perform it.[21]

Treatment

Fever in children is rarely harmful, and treatment may not always be necessary. The temperature necessitating treatment or a doctor's consultation is arbitrary and depends on other symptoms as well as the duration of fever.[22] While appropriate management of the illness must be the central part of looking after feverish children, concern for their comfort has made the use of antipyretic drugs commonplace.[23]

Antipyretic drugs

In this review paracetamol was the most widely recommended antipyretic. This drug has an established place in managing fever in children, and doctors increasingly recommend it. Although it is extensively used and has a good safety record, there have been reports that its margin of safety for frequent therapeutic doses in infants and young children is lower than previously appreciated.[24 25] However, underdosing by parents is more common than overdosing and may lead to ineffective treatment of fever and unnecessary visits to the doctor's office.[26] Only a quarter of the web pages that recommended paracetamol gave specific instructions about the dose and frequency of administration. Since paracetamol is sold over the counter and feverish children are often treated without medical control it is worrying that more emphasis was not placed on the need for close adherence to recommended doses.[27 28]

Some web pages also recommended treatment with ibuprofen. The use of this drug as an antipyretic in children is not approved in all countries, however, and its limited safety data require that paediatric ibuprofen be made available only with prescription. Although ibuprofen and paracetamol seem to be equally safe, further surveillance is needed before ibuprofen is given the confidence afforded paracetamol.[29 30]

Two web pages recommended aspirin for treating fever in children. The use of salicylates should be discouraged in children with viral infections, particu-

Table 3 Adherence of 41 sites on the world wide web that gave parent oriented information on home management of childhood fever to the recommendations listed in published guidelines[16]

	Aspects of home management of childhood fever				
Web site*	Temperature measurement	Drug treatment	Sponging procedures	Other physical remedies	When to call a doctor
Accès Santé-Voyage	Yes	No	No	Yes	Yes
Airdrie Medical Clinic	Yes	Yes	No	No	Yes
American Housecall Network	Yes	Yes	Yes	Yes	Yes
American Association of Naturopathic Physicians	Yes	No	No	Yes	No
Anturio	No	Yes	No	Yes	No
Arlington Online	No	No	No	No	No
Blue Cross Blue Shield of Delaware	No	Yes	No	Yes	Yes
Canadian Child Care Federation	No	Yes	No	No	Yes
Children's Health Care System	No	Yes	No	Yes	Yes
Children's Hospital Medical Center	No	No	No	Yes	Yes
Connecticut Children's Medical Center	No	Yes	No	Yes	Yes
Country Living	No	Yes	No	Yes	Yes
Department of Family Practice	No	Yes	No	Yes	Yes
Doctors Book of Home Remedies for Children	No	Yes	No	Yes	Yes
Dr Reddy's Pediatric Office on the Web	Yes	Yes	No	No	Yes
Drs4Kids	No	Yes	No	No	No
Framingham Pediatrics Web Page	Yes	Yes	No	Yes	Yes
General Health System	No	Yes	No	No	No
Health World	Yes	Yes	No	Yes	Yes
Kids Doctor	No	Yes	Yes	Yes	Yes
Kids Health	Yes	Yes	Yes	Yes	Yes
Los Altos Online	No	Yes	No	Yes	No
Mead Johnson Canada	No	No	No	Yes	Yes
Mercurio Net	No	Yes	No	Yes	No
Mi Pediatra	Yes	Yes	No	Yes	No
Microsoft Pregnancy and Child Care Preview	Yes	Yes	Yes	Yes	Yes
Moms Online	Yes	Yes	No	No	Yes
NAPS-NET	No	No	Yes	No	No
Newhope	Yes	No	No	Yes	Yes
News USA	No	Yes	No	No	No
Optimum Solutions	No	Yes	No	Yes	Yes
Parents Place	No	Yes	No	Yes	Yes
Pediatrics	No	Yes	No	Yes	Yes
San Jose Good Samaritan Medical Group	No	Yes	No	Yes	Yes
School Nurse Forum	No	Yes	No	No	No
Sistema de Emergencia Médico Móvil	Yes	Yes	Yes	Yes	Yes
The San Jose Newschannel	Yes	No	No	No	Yes
Thrifty Payless Holdings	Yes	Yes	No	Yes	No
UKOnline Limited	No	Yes	No	Yes	Yes
Universität Innsbruck	No	No	No	Yes	No
Virtual Hospital	Yes	No	No	No	No

*Web site addresses are available on the internet at www.bmj.com.

larly upper respiratory tract infections or varicella, because of a possible association with Reye's syndrome.[31] Finally, one resource considered dipyrone as an antipyretic for children. This drug was removed from the market in Britain, the United States, and many other countries long ago because of the risk of it causing agranulocytosis.[32]

Sponging

In addition to drugs, most documents recommended physical remedies to reduce fever. Tepid sponging was the most widely suggested method, but sponging is only rarely necessary in children because antipyretic drugs are simpler to use, at least as effective in reducing body temperature, and cause less discomfort.[13] Although sponging is recommended in occasional cases of very high temperature (>40-41°C, plus discomfort), some of the documents suggested sponging children with temperatures as low as 38.5°C. Moreover, when sponging is performed it is important to first give an antipyretic drug, a requirement not adequately emphasised in most of the web pages. Sponging, in fact, does not affect the thermoregulatory set point, and a feverish child may experience more discomfort as the hypothalamus attempts to offset the decreased body temperature.[33]

Two web pages suggested cold sponging or sponging with alcohol as remedies for fever. These methods should always be discouraged. Cold sponging opposes the physiologically raised set point in the hypothalamus, leading to shivering, which is counterproductive and actually serves to raise body temperature.[34] Inhalation of alcohol during sponging may induce hypoglycaemia and coma in children.[35]

Conclusions

Variability in both content and quality of medical information to the public is not exclusive of the internet, as wide differences also exist in other forms of public communication, such as print and broadcast media. However, only a few of the web pages we reviewed gave complete and accurate information for such a common and widely discussed condition as fever in children. This suggests that there is an urgent need to check public oriented healthcare information on the internet for accuracy, completeness, and consistency.

Parents can gain from online information about managing common health problems in their children, but it may be difficult for them to put educational messages into practice when the information they receive, as revealed in this study, is often incomplete and partly misleading. Because parents are often reluctant to follow advice that clashes with their beliefs and established practices, online information, to be effective, must not only be accurate but should be developed according to parents' perceived needs and draw on their skills and experience. The internet can be a good source of information on common health problems, but advice obtained through the world wide web should not be a substitute for routine care by a family doctor. Moreover, the expansion of public oriented healthcare information on the internet should not draw resources away from other communication media.

Additional studies on different information strategies for the home management of fever in children are needed in order to establish the most rational and effective method of influencing parents' long term attitude and behaviour. In particular, it would be interesting to investigate how access to the world wide web affects parents' healthcare behaviour and to evaluate the quality and accuracy of more traditional sources of advice for parents (childcare books and pamphlets, etc), which would probably be no better than those of the web pages.

Key messages

- Fever in children is a common problem, and accurate information on home management of feverish children could be useful for parents
- A systematic search on the world wide web for such parent oriented information retrieved 41 web pages, but only four adhered closely to published guidelines for home management of childhood fever
- These findings suggest the urgent need to check public oriented healthcare information on the internet for accuracy, completeness, and consistency
- Information on the internet should not be a substitute for routine care by family doctors

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Commentary: Measuring quality and impact of the world wide web

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The world wide web gives patients and professionals access to thousands of pages of clinical information, some of which are assessed by Impicciatore et al above.[1] However, although the web makes it absurdly easy to disseminate information, by allowing anonymous authors to conceal commercial or other conflicts of interest[2] it does not help readers to discriminate between genuine insight and deliberate invention.[3] Thus, recent proposals for improving the accountability of medical information on the internet[2] will enhance its value. Sometimes, though, checking whether a web site passes the criteria of Silberg et al for explicit authorship and sponsorship, attribution of sources, and dating of material[2] is not enough, as Impicciatore et al show.[1] For example, most doctors would recommend to patients or junior colleagues only those web sites whose content seemed of adequate quality. Some clinicians might go further and have to satisfy themselves that a site was well constructed, easy to use, and had a beneficial impact on doctors and patients.

Thus, for many purposes, evaluation of web sites needs to go beyond mere accountability to assessing the quality of their content, functions, and likely impact (see table 1)—similar to the assessment of electronic textbooks, telemedicine, and decision support systems,[4-6] where the same issues arise.

Evaluating the content and structure of a web site

Since internet philosophy declares that anyone can set up a web site[7] there is a risk that, through ignorance or bias, the content of the site may not be correct even if the original information sources were reliable. Impicciatore et al showed that parents searching for information about treating a feverish child could either receive good advice or be advised to administer aspirin, putting their child at risk of Reye's syndrome, according to which web site they visited.[1] These investigators compared the information available on each site with statements in a reputable textbook, but such statements often disagree with contemporary systematic reviews of the literature.[8] Thus, to determine the accuracy of web material we need to compare it with the best evidence, which usually means a meta-analysis of the appropriate kind of evidence. For effectiveness of treatment this is randomised trials,[9] but for risk factors it is cohort studies, and for diagnostic accuracy it is blinded comparisons of the test with a standard.[10]

An important advantage of publishing on the internet is that it allows regular, even hourly, updating,[7] so that patients and professionals using the world wide web expect material to be more up to date than paper sources. The easiest way to assess timeliness is to check the date on web pages,[2] but, since the material may not have been current even then, independent comparison with the most up to date facts obtained elsewhere is preferable.

Even if the content is correct and up to date, people must be able to read and understand it. The web allows information to be communicated in many ways—as diagrams, animations, linked pages, flashing red capitals on a blue background, etc—which may not always improve legibility and comprehension.[11] Asking visitors to a web site to record their satisfaction with the material is unlikely to reveal problems with comprehension, as visitors may not realise that they have misunderstood or may blame themselves. For web sites intended for the general public, it is useful to decide a minimum reading age for the material; a word processor's grammar checker can then be used to assess the text's readability and reading age. This is often underestimated; for example, the minimum reader age for this paragraph is 18 years. However, such measures are less revealing than asking subjects to answer questions based on the material.

Evaluating functions of a web site

One major concern of web site developers is how easily web users can find their site. While some site addresses are published in journals (such as the *BMJ*'s "Netlines"), many users locate material by following links from other sites or conducting a search with a web search engine.[7] Thus, we need to measure how many steps typical users take to locate the site and what other advice they come across on the way. Returning to Impicciatore et al,[1] we do not know which of their 41 sites anxious parents would have found first; they might never have seen the misleading ones in real searches. Thus, evaluators should first identify the subset of web sites which typical users do locate and then assess the quality of these.

Since some web sites are complex, a second question is how easily users can locate relevant material within the site. It is useful to compare users' ease of navigating through the site with the ease of using a printout of the material or the paper

Table 1 Aspects of a web site which need to be considered when evaluating its reliability

Aspect	Evaluation method
Credibility, conflicts of interest	
Web site owner or sponsor, conflicts of interest	Inspect site (Silberg et al's criteria)
Web site author, credentials	Inspect site (Silberg et al's criteria)
Structure and content of web site	
References to sources	Inspect site (Silberg et al's criteria)
Coverage, accuracy of content material	Inspect site (Silberg et al's criteria; compare with current best evidence)
Currency of content material	Inspect site (Silberg et al's criteria; compare with current best evidence)
Readability of material	Calculate reading age, readability indices (word processor grammar checker)
Quality of links to other sites	Inspect site, judge if appropriate
Media used to communicate material	Inspect site, judge if appropriate
Functions of web site	
Accessibility of site via search engines	Laboratory test with users
Use of site, profile of users	Web server statistics, online questionnaires
Navigation through material	Laboratory test with users
Impact of web site	
Educational impact on users	Laboratory test, field trial
Impact on clinical practice, patient outcome	Laboratory test, field trial

documents from which the web site is derived, to judge if the electronic medium makes information easier, or more difficult,[12] to locate.

A third functional issue is whether the web site is actually used, and by whom. Most "server" software for web sites logs each access to each page together with the abbreviated internet address of the requesting computer. However, such records of use must be interpreted carefully: accesses to a page may be accidental, casual browsing by "info-tourists," or by users en route to another page. Since most server logs do not distinguish repeated visits to a page by the same individual, visits to a page cannot be equated with visitors. To collect more information, users can be asked to fill in web forms, but, as with paper questionnaires, most usually fail to do this, casting serious doubt on the generality of the data.[13] Even if data on use are genuine, comparison of rates of use between different sites needs to be simultaneous rather than historical, given the exponential growth in the use of the internet.

Evaluating the impact of a web site

For those investing resources in a web site, a key question is its likely impact on clinical processes and patient outcomes and its cost effectiveness compared with other methods for delivering the same information.[5] Tentative answers to this question can be obtained by studying the impact of the site on the knowledge of sample users in laboratory settings, but its real impact on clinical practice can be studied only in the field. Randomised trials comparing the effects of providing the same information in two different ways raise problems familiar to evaluators of other kinds of information resource,[4-6] such as contamination of the management of patients in one arm of the trial by the management of patients in the other arm, and Hawthorne effects. There do not seem to be any published trials of the effects of the world wide web on clinical practice, but such assessments are clearly essential to justify large scale expenditure on computer networking and web sites and to define adverse effects.

Methodology of evaluation

There are two key issues common to many evaluation studies: choosing appropriate subjects and making reliable, valid measurements.

Choosing appropriate subjects

Studies of information technology often use poorly selected subjects, typically enthusiasts for the technology in question.[5] The reported details about the users or clinical setting may be insufficient to know if they are representative of all patients or professionals who might use the information resource. This problem is particularly acute when response rates are low.[6] For example, in a survey of users a key question is what were the views or demographic profile of those—typically the majority—who used the web site but did not respond to online questions?

Making reliable, valid measurements

Measuring complex human attributes such as intelligence or ease of navigating a web site is hard, requiring systematic testing and refinement of pilot questions.[6 13] Two major factors determine whether such data are useful: reliability (are the data stable across distinct but similar individuals, or the same individual tested on two occasions?) and validity (is the question measuring what we think it is measuring?). A further issue is anchoring of measurement results so that we can interpret, say, a navigation score of 3 in terms of something known, such as the ease of navigating a printed document. Reliability and validity are extremely sensitive to details of the wording of questions, so ambiguity and vagueness must be eliminated.[13] However, it is not unusual to find web forms containing poorly worded questions such as, "Age: 20 to 40 years? 40 to 60 years? 60 and above?" Ideally, investigators would have access to a library of previously validated measurement methods, such as those used for quality of life. However, few methods are available for testing the effects of information resources on doctors and patients, so investigators must usually develop their own and conduct studies to explore their validity and reliability.[6]

Conclusion

Although surfing the web provides an excellent method for patients and professionals to access clinical knowledge,[2 7] unless we evaluate the quality of clinical sites and their effects on users, we risk drowning in a sea of poor quality information. Improved technology is not the answer to making better use of this enticing resource. We need to be clearer about the web's clinical role and the evaluation problems that it raises—how to recruit suitable subjects, develop valid and reliable methods of measurement, and carry out many more rigorous evaluations.

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Netlines

Extra! Extra! Read all about it!

- Medicine is seldom out of the news, and it can be a struggle to keep up with what journalists are saying (and hence what patients are hearing). One way is to use the excellent news resources available on line. Reuters Health News is available on **http://www.reutershealth.com/news**, while CNN has a health section on **http://cnn.com/HEALTH/**.
- Most of the British quality dailies now have at least a limited presence on the internet—try visiting them on **http://www.telegraph.co.uk**, **http://www.guardian.co.uk**, **http://www.the-times.co.uk**, and **http://www.independent.co.uk**.

European Vascular Surgery Society

- The European Vascular Surgery Society now has a web site accessible on **http://www.esvs.org**. The site houses information on all aspects of the society's activities (including details of membership and travel grants) and links to other sites with information on vascular surgery, including the online version of the *European Journal of Vascular and Endovascular Surgery*.

Mental health law on line

- The web site of the Institute for Mental Health Law (**http://www.imhl.com**) is worth a look for psychiatrists, lawyers, and anyone else who has to deal with legal aspects of mental health. There is a history of legislation about mental health and reports on court cases and inquiries about mental health, together with links to other material on mental health law.
- Also worth a visit is the HyperGuide to the Mental Health Act 1983 (**http://www.hyperguide.co.uk/mha/**), which provides an excellent illustration of hypertext in action.

Bristol Biomedical Image Archive

- The Bristol Biomedical Image Archive (**http://www.ets.bris.ac.uk/brisbio.htm**) is a collection of about 20 000 images that you can use to teach medical, veterinary, and dental science. Although use of the images is free, you will have to register before you can download them.

Guide to Clinical Preventive Services

- The full text of the Guide to Clinical Preventive Services, produced by the United States Preventive Services Task Force (USPSTF), can be found on **http://cait.cpmc.columbia.edu/texts/gcps/**. The guide provides an online source of evidence based information on the effectiveness of clinical preventive services such as screening, immunisation, and health education.

Whole Brain Atlas

- For the definitive online voyage through the human brain, visit the Whole Brain Atlas on **http://www.med.harvard.edu:80/AANLIB/home.html**. You can view hundreds of images (moving and still) of normal and abnormal brain structures, although you will need a JAVA-compliant browser for the best effects.

Project Gutenberg

- Project Gutenberg (**http://www.promo.net/pg/index.html**) is an ambitious project to make all the major written works that are out of copyright freely available on line in electronic format ("etext"). Several sites around the world house the project's etext archive (**http://www.promo.net/pg/lists/list.html**), which presently contains over 900 texts ranging from *Alice in Wonderland* to *Zen and the Art of Internet* with all of Shakespeare and a large slice of English literature in between. Sadly, I could find few medical texts in the archive. Volunteers who would like to help get Hippocrates, Galen, Harvey, etc, on line should visit **http://www.promo.net/pg/volunteer.html**.

But for an email...

- If you forget appointments, anniversaries, birthdays, etc, try using Tickler Mail (**http://www.joes.com/tickler.html**). You can set up it up so that you will receive an email at any date in the future, reminding you of whatever you need to remember.

A walk on the weird side

- If you are looking for the weirder side of life on line, try the novel *Nearly Roadkill* by Caitlin Sullivan and Kate Bornstein—there is transsexuality, online sex, and "Big Brother" paranoia all mixed in with a dollop of cyberculture. You can sample it on **http://www.nearlyroadkill.com/**. If you prefer cyber-cocoa to cyber-speed, try Stephanie Fletcher's *E-mail: a Love Story* instead (only available in deadtree format), but you still might blush at the online sex scenes.

Compiled by Mark Pallen
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web page **http://www.qmw.ac.uk/~rhbm001/mpallen.html**

If you are not yet on line you can find help in getting connected in the *ABC of Medical Computing* (eds Nicholas Lee and Andrew Millman, BMJ Publishing), which has Mark Pallen's *Guide to the Internet* as a supplement.