

# Evaluating World Wide Web-based foot care information

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## ARTICLE POINTS

**1** The NHS increasingly promotes the use of the Internet for health information.

**2** Internet-based information on foot care for individuals with diabetes on UK-focused consumer health websites were reviewed.

**3** Of 26 websites identified, seven held relevant, but not comprehensive, information. The websites were not all easy to navigate.

**4** Consumers may need help to source and appraise Internet information.

**5** Health professionals should consider giving some simple advice on judging website quality.

## KEY WORDS

- Internet
- Information appraisal
- Self-management
- Patient education

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## Introduction

**The NHS is encouraging individuals to be increasingly proactive in their healthcare, promoting the Internet as a source of patient information (Department of Health and NHS Executive, 1998). As the Internet is increasingly used by patients, it is important to ensure that individuals source relevant and good-quality information, which is easily accessible through UK-focused consumer health websites. This article describes a study undertaken to assess the quality of Internet-based information on foot care available to people with diabetes in the UK.**

Given the possible outcomes of peripheral ischaemia and neuropathy associated with diabetes, the care of individuals with the condition is one of the most important areas of podiatric practice. These outcomes, combined with high foot pressures, self-treatment or both, can lead to morbidity and mortality, with foot ulceration the most common manifestation of diabetic neuropathy, and diabetes being the second commonest cause of lower limb amputation (Department of Health [DoH], 2001). Guidelines for diabetes care have cited health education as essential to prevent and minimise foot pathology, and foot care education is promoted as an important part of managing diabetic foot disease (Scottish Intercollegiate Guidelines Network [SIGN], 2001). For podiatrists, as for other health professionals, health education constitutes a large part of practice with regard to the high-risk patient, such as those with diabetes (Cooper et al, 2003).

Traditionally, within the medical model of health care, the health professional holds the role of educator, and health education has been delivered on a face-to-face basis, usually verbally or with printed material. Historically, the health professional has been the giver of this necessary information and the patient has merely been the vessel to receive it (Muir Gray, 2002). In the 20<sup>th</sup> Century, the clinician held the resources,

and the patient simply had to be patient (Coulter, 2002). It is now recognised that the 21<sup>st</sup> Century patient needs and desires knowledge about his or her condition and its management, and increasingly uses his or her own resources (e.g. the Internet) to access this (Muir Gray, 2002).

The Internet is a key influence in the changing balance of power and knowledge between the medical professions and the public (Powell and Clarke, 2002). This move towards patient empowerment and involvement in decision-making has meant that many individuals wish to access information at their own convenience; the Internet facilitates this (Rhodes, 2000). The access of Internet information is totally within the control of the individual.

Many doubts remain, however, about quality. The Internet is widely unregulated, and anyone who wishes to can publish information online. While online appraisal tools are available, many lay searchers may not understand the need for this, and may accept information at face value (Rhodes, 2000; Powell and Clarke, 2002). They may be unaware of possible information bias, or misleading authorship (Kiley, 2000; Cline and Hayes, 2001).

While Hejlesen et al's study (2001) on using the Internet for patient-centred diabetes care reported that patients often find it hard to judge quality of information, UK research of Internet use for health information by patients from

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**1** Where patients might falter is in knowing what criteria to use to judge Internet-based health information.

**2** Criteria discussed by Silberg et al (1997) remain relevant today, and include authorship, copyright, ownership of the website and currency.

**3** The authors undertook a small study with the specific objective of evaluating the diabetes foot care advice of UK-focused consumer health websites against a 'gold standard'.

**4** Each site was examined for details of ownership, country of origin, copyright, presence of a disclaimer and presence of quality 'kite marks', such as the HON code.

one general practice found that consumers are indeed aware of potential difficulties with interpreting information (Rose et al, 2002). Where they might falter is in knowing what criteria to use to judge health information. Criteria discussed by Silberg et al (1997) remain relevant today, and include authorship (who wrote the content?), copyright (who owns it, and what is its date?), ownership of the website and currency (is the content current, and when was it last updated?). These criteria form the basis of quality 'kite marks' for health websites, such as the 'HON code' (Health On the Net Code of Conduct) of the Health On the Net Foundation (<http://www.hon.ch> [accessed 23.02.2006]; Figure 1). Evaluated subject catalogues such as Organising Medical Networked Information (OMNI; <http://www.omni.ac.uk> [accessed 23.02.2006]), and information quality sites such as Judge: web sites for health (<http://www.judgehealth.org.uk> [accessed 23.02.2006]) also adhere to these criteria.

Silberg et al's (1997) maxim 'caveant lector et viewer – let the reader and viewer beware' is as sensible a caution today as it ever was, and should be remembered by all who seek health information on the Internet.

We undertook a small study, funded by Queen Margaret University College, Edinburgh, with the specific objective of evaluating the diabetes foot care advice of UK-focused consumer health websites against a 'gold standard': *Taking care of your feet* (Diabetes UK, 2000). The information in this leaflet was condensed and itemised to give a possible maximum score of 23, and the content of web pages was compared against this.



Figure 1. The Health On the Net Foundation code ('HON code') serves as a quality 'kite mark' for health information websites.

**Methods**

A convenience sample of UK-based consumer health websites was sourced from *The Good Web Guide to Health* (Muir, 2001), Ask Jeeves (now Ask.com UK; <http://www.ask.com> [accessed 23.02.2006]), Healthsites (<http://www.healthsites.co.uk> [accessed 23.02.2006]) and UK250.co.uk (<http://www.uk250.com/health> [accessed 23.02.2006]).

While the Internet is fluid and ever changing, we consider this a representative sample available to the UK-based individual.

Each site was examined for details of ownership, country of origin, copyright, presence of a disclaimer and presence of quality 'kite marks', such as the HON code.

A variety of search terms were entered in each website:

- "diabetes AND footcare"
- "diabetic foot care"
- "foot care" AND "diabetes".

Sections on diabetes were also searched, or 'diabetes' selected from an A-Z listing where present.

Sites were examined for foot care information and links to relevant information. A score of 23 (100%) would signify completeness of information.

**Results**

Twenty-eight consumer health websites were identified, with two other sites described as consumer health websites being identified when collecting data, giving an initial list of 30. Four sites were inaccessible so 26 sites were examined and the content scored.

**Country of origin, ownership of site, and copyright**

Despite targeting UK-based sites, 23 were identified as being UK-based or -owned, with the remainder identified as originating from the USA (2) or Switzerland (1).

Full details of site ownership were displayed by 25 websites. One displayed no details of ownership, being in effect a varied collection of individually written articles, submitted electronically for publication. This site was identified as being UK-based purely by its URL, and displayed no copyright details. All other sites contained full copyright information.

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1 Front pages of the sites were examined for presence of quality 'kite marks' and awards. The HON code was displayed by eight sites, although on two sites it was not displayed on the front page.

2 Seven sites had relevant foot care information available within six clicks of the home page, and these sites were further analysed for completeness of information.

3 No site achieved a maximum score of 23; scores ranged from 5.5 to 14.5. Information and advice in all cases was correct, but not comprehensive when compared with the Diabetes UK leaflet.

4 To access relevant information, the searcher often had to be very determined, and somewhat of a lateral thinker, as relevant information was not always in the most obvious place.



Figure 2. Only one site (<http://www.medicdirect.co.uk>) recommended 'consulting a State Registered Chiropodist/Podiatrist' for diabetic foot advice.

**Disclaimer**

Twenty sites displayed a formal disclaimer, with four having none apparent, and two having disclaimer information under other sections (e.g. legal and copyright information sections). Only one site displayed the full disclaimer text on its front page, before the content; the remainder required several 'clicks' to reach the disclaimer.

**Quality 'kite marks'**

Front pages of the sites were examined for presence of quality 'kite marks' and awards. The HON code was displayed by eight sites, although on two sites it was not displayed on the front page.

Other logos displayed were those of OMNI, the Centre for Health Information Quality and the British Medical Association. Other awards displayed were discounted, due to not being nationally or internationally recognised quality indicators.

**Relevant foot care information and advice**

Sixteen sites provided links to the website of Diabetes UK (<http://www.diabetes.org>).



Figure 3. The front page of the Patient UK website gives visitors guidance on how to judge the quality of health information available on the website.

uk [accessed 23.02.2006]; another relevant link was to the website of the Society of Chiropodists and Podiatrists (<http://www.feetforlife.org> [accessed 23.02.2006]).

Seven sites had relevant foot care information available within six clicks of the home page, and these sites were further analysed for completeness of information (Table 1). Only one site (<http://www.medicdirect.co.uk> [accessed 23.02.2006]) specifically recommended 'consulting a State Registered Chiropodist/Podiatrist' for diabetic foot advice (Figure 2); other sites used varying terms such as 'foot doctor', 'health professional', and 'healthcare provider'.

**Judging quality of information**

UK Healthcentre (<http://www.healthcentre.org.uk> [not accessible on 23.02.2006]), Health On the Net Foundation (<http://www.hon.ch> [accessed 23.02.2006]) and Patient UK (<http://www.patient.co.uk> [accessed 23.02.2006]) displayed information about assessing health and medical information on the Internet. Patient UK linked to this by displaying the question 'How can I judge the quality of health information?' on its front page (Figure 3).

**Completeness of information**

No site achieved a maximum score of 23; scores ranged from 5.5 to 14.5. Information and advice in all cases was correct, but not comprehensive when compared with the Diabetes UK leaflet.

To access relevant information, the searcher would often have had to be very determined, and somewhat of a lateral thinker, as relevant information was not always in the most obvious place. For instance, while the Patient UK website offered leaflets in 30 languages, these were only accessible through the 'Diabetes' section in the 'self-help' area, and were not accessible through the 'Information Leaflets' link on the front page of the site. Had the searcher gone initially to 'Information Leaflets', the high-quality information available would have been missed. (Since carrying out the study, the information is now available through the 'Leaflets' link on the front page of the website.)

However, Patient UK was a particularly useful site in that, at the time of the study, it contained good-quality colour photographic representation of podiatric conditions such as interdigital tinea pedis and ingrowing toenail, and a well-illustrated section on footwear. It was also the only site that advised against smoking, and offered advice on accessing smoking cessation clinics.

### Study limitations

The nature of the Internet is that it is extremely fluid. Websites change content and design frequently, sometimes even daily, and indeed appear and disappear at a frustratingly fast rate. This is illustrated by the fact that, in the time elapsed between the study being carried out and the publication of this article, several of the websites discussed are no longer active. Therefore, it is accepted that it is nigh-on impossible to replicate this research.

It is also accepted that as only one individual gathered and analysed the data,

this methodology did not test the validity or reliability of the search strategy, or the reliability of the scoring.

### Discussion

The results confirm that while vast amounts of health information are available via the Internet, it is often extremely difficult to access high-quality, relevant information, despite the fact that the Internet is promoted as a means to speedily access current and comprehensive health information (DoH and NHS Executive, 1998).

While this project specifically targeted consumer health websites, less than one-third contained easily accessible relevant information. Some sites, while containing much high-quality health information, proved daunting to navigate due to the enormous amount of information and links available. Examples of such sites were those of the Health Education Board for Scotland (<http://www.hebs.scot.nhs.uk> [accessed 23.02.2006]) and The National Electronic

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**Table 1. Websites which displayed relevant foot care information, with information points used for scoring completeness of information. (All sites accessed 23.02.2006 except www.healthinfocus.co.uk, which was no longer accessible.)**

Points available	Information (adapted from Diabetes UK [2000])	Patient UK www.patient.co.uk	Health in Focus www.healthinfocus.co.uk	Medic Direct www.medicdirect.co.uk	Health On the Net www.hon.ch	NeLH www.nelh.nhs.uk	NHS Direct www.nhsdirect.nhs.uk	Web MD www.webmd.com	
	<i>How can diabetes affect my feet?</i>								
1	Neuropathy	1	1	0.5	1	1	1	1	
1	Circulation	1	1	1	1	1	1	1	
	<i>How do I look after my feet?</i>								
2	General hygiene	2	*	*	2	2	2	2	
2	Skin	2	*	2	2	2	2	2	
2	Nails	2	*	2	2	2	2	2	
2	Footwear	2	1	1	2	2	2	2	
	<i>What are the danger signs on the feet?</i>								
2	Swollen areas, colour change, pain, non-healing lesions	1	*	*	*	*	*	*	
1	Check feet every day	1	1	*	1	1	1	1	
1	Do not self-treat	1	1	1	*	*	*	1	
1	Consult a podiatrist	1	*	1	1	1	1	0.5	
	<i>What is an infection?</i>								
1	Definition	*	*	*	*	*	*	*	
1	Signs – colour, pain, swelling, movement, temperature, pus	*	*	*	*	*	*	*	
1	Action to take	*	*	*	*	*	*	*	
	<i>How do I get help to look after my feet?</i>								
1	Various options, stress state-registered chiropodist/podiatrist	0.5	0.5	1	0.5	0.5	0.5	0.5	
	<i>Always seek help with your feet if...</i>								
1	Any danger signs noticed	*	*	*	*	*	*	1	
1	Had diabetes for many years and have not had feet checked	*	*	*	*	*	*	*	
2	Difficult to check/care for feet/ have any questions about foot care	*	*	*	*	*	*	*	
<b>Total = 23</b>		<b>14.5</b>	<b>5.5</b>	<b>9.5</b>	<b>12.5</b>	<b>12.5</b>	<b>12.5</b>	<b>14</b>	

\* indicates no information was present

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1 Of the seven sites that did contain relevant information, five provided comprehensive foot health advice, but despite the methodology being specifically designed to focus on UK-based sites, this information was North American in origin.

2 The study showed a high number of consumer health websites to have a hyperlink to the Diabetes UK site but searchers may go no further than the consumer health website itself.

Library for Health (<http://www.nelh.nhs.uk> [accessed 23.02.2006]).

Of the seven sites that did contain relevant information, five provided comprehensive foot health advice, but despite the methodology being specifically designed to focus on UK-based sites, this information was North American in origin. While for diabetes, foot care health information may not vary across the globe, for some areas of medical care, such as therapeutic interventions, there may be great differences between UK- and USA-based treatments, and the public must be made aware of that (Ellis and Thomson, 2003). Interestingly, it appeared that the information displayed on NHS Direct Online (<http://www.nhsdirect.nhs.uk> [accessed 23.02.2006]) at the time of the study was derived from a USA-based site, the text being verbatim from the National Diabetes Information Clearinghouse (<http://www.niddk.nih.gov> [accessed 23.02.2006]).

Our findings are consistent with recent similar research: i.e. while useful and high-quality information is available on the Internet, it is not always readily accessible. The study by Ellis and Thomson (2003) highlighted some potentially dangerous advice on treatment of verrucae in children, which could have had serious implications if followed by an individual with diabetes. Another study by Schmidt and Ernst (2003) that aimed to investigate information on complementary or alternative medicine for diabetes had similar findings to those of Ellis and Thomson (2003) regarding quality of available information, in that it suggested that in only seven of 13 cases could the authors be confident that patients were not at risk of harm from advice given on the sites. This being the case, it is suggested that consumers may need guidance on search techniques, and in judging both the quality of websites and the information contained therein.

Diabetes is hailed as the 'new epidemic' (SIGN, 2001), and therefore it is expected that increasing numbers of individuals with diabetes will require health care. Diabetes UK emphasises that patient empowerment is a two-way street, and that patients must be willing to seek information for themselves (Diabetes UK, 2003). There

is reported evidence that diabetes is a common topic of interest among healthcare information seekers on the Internet and this level of interest is reflected in the high visibility of diabetes-related topics on consumer-oriented websites (Kim and Ladenson, 2002).

Our study showed a high number of consumer health websites to have a hyperlink to the Diabetes UK site but searchers may go no further than the consumer health website itself. One of the problems about health information on the Internet is that while it is known how many individuals visit consumer health websites, not much is known about the user profile. Houston and Allison (2002) undertook a USA telephone study of 2027 randomly selected individuals who used Internet-based health information, and the results suggested that more females (64%) used the Internet for information than males. While the results from this North American study cannot be generalised to the UK, it is still interesting to note that over half (52%) of the respondents believed the information they found could be accepted at face value.

Websites are, however, not always what they seem, and the names of some sites may not reflect their content; for example, <http://www.health-resources.co.uk> [not accessible 23.02.2006], was at the time of the study a collection of online articles of varied topics, apparently open to all to publish, rather than a consumer health information resource. It is unclear who owned the site, and what the procedure was for article review before publication. Another example from recent research found a website whose name suggested an academic institution. On closer inspection it turned out to be a site owned by an individual, and not a university as suggested (Ellis and Thomson, 2003). Thus, it is important for the healthcare professional to be able to guide individuals toward a selection of good-quality useful consumer health websites, where appropriate information can be found, and also for the individual to have some skill in appraising website content.

A paper by Robertson (2002) discussed diabetes and the Internet, citing the World Wide Web as 'the friendly face of the

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1 Rhodes (2000) suggested that expansion of the practitioner's role will increase the need to provide consumers (patients) with basic instruction on how to find the best information on the Internet.

2 The authors' study results concur, reinforcing the need for healthcare professionals involved in the care of individuals with diabetes to ensure they feel reasonably comfortable with the area of health informatics.

3 The quality of information accessed from the Internet via this search strategy was good, in that no inaccuracies or potentially dangerous advice or information was identified.

4 However, the majority of sites visited had little information easily accessible.

Internet', and reporting the extensive amount of support material available, but made no mention of the need to appraise the information found.

### Recommendations

Rhodes (2000) suggested that expansion of the practitioner's role will increase the need to provide consumers (patients) with basic instruction on how to find the best information on the Internet. Our study results concur, reinforcing the need for healthcare professionals involved in the care of individuals with diabetes to ensure they feel reasonably comfortable with the area of health informatics. Thus, they will be able to give individuals guidance toward consumer health websites, as well as basic principles and support on how to evaluate the health information they find.

One ongoing concern with Internet-based information is that many individuals still do not have Internet access, or do not feel skilled in the use of the Internet. This is an area that may be developed from an early stage; indeed an excellent website has been developed jointly by the Department of Health and the Department for Education and Skills (<http://www.wiredforhealth.gov.uk> [accessed 23.02.2006]). Information appraisal skills can also be introduced at an early age, an excellent site being <http://www.quick.org.uk> (accessed 23.02.2006), which is also useful for adults!

### Conclusion

The quality of information accessed from the Internet via this search strategy was good, in that no inaccuracies or potentially dangerous advice or information was identified. However, the majority of sites visited had little information that was easily accessible. Some sites held so much information and had so many links that it was difficult to access the relevant pages.

For an individual to gain comprehensive information and advice, it may be necessary to visit several sites. If individuals are unsure as to which are trustworthy sites, or indeed information is accepted at face value, then they may potentially be at risk, or search fruitlessly. Simple guidelines by healthcare professionals to help patients access relevant trustworthy information

may be based on Silberg et al's criteria (1997). Thus, the health professional can help individuals access information which is accurate, relevant and comprehensive. ■

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