Digital consumer health information and advisory services in the UK: a user evaluation and sourcebook

A summary report of the research project:
The web, the kiosk, digital TV and the changing face of consumer health information provision: a national impact study. April 2000 – March 2004

Ciber (Centre for information behaviour and the evaluation of research)

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Abstract

The summary report of the research project, *The web, the kiosk, digital TV and the changing face of consumer health information provision: a national impact study*. The project, conducted over the four-year period (April 2000 - March 2004), constituted the first major nation-wide evaluation of the use and impact of digital health information platforms provided for thousands of UK health consumers. Three digital health platforms were investigated and evaluated, featuring several hundred touchscreen kiosks - those of InTouch with Health and NHS Direct. The Internet was represented by three health websites - SurgeryDoor, NHS Direct Online and Medicdirect; and digital interactive television was represented by four Department of Health sponsored pilot services - Living Health, Channel Health (within which the researchers were charged with evaluating the broadcast programme Bush Babies and its accompanying support materials), Communicopia (NHS Direct Digital) and DKTV (a Different Kind of Television). With regard to the latter, the study examined only the health information service.

A project of such duration, scope, novelty and complexity inevitably featured a large number of individual (and linking) studies. In fact, the report provides a consolidation of more than fifty individual studies, the results of which have been published in more than sixty journal articles. There were studies of: different health platforms and digital health services, types of user (i.e. by age, gender), aspects of information seeking, trust and authority of digital health data, the health impacts of digital information seeking, methods for establishing service performance, and also comparative studies of the different platforms and services. Research methods for evaluating digital services with audiences of hundreds of thousands of users were pioneered and developed, especially in regard to remote, quantitative methods - most notably log analysis. Findings are structured to firstly recount study findings from individual platforms: health kiosks, health websites, health digital interactive television and then to synthesise these to provide cross-platform studies.

The full report is packed full of facts, statistics and data and constitutes an extensive reference source on how health consumers behave when online, how they perceive digital health services and what health benefits these services have. The data are of particular relevance to policy makers and health professionals who are often in the dark as to how the digital health consumer behaves. The summary report contains only the key contextual data, conclusion and the recommendations.

Chapter 1 – Introduction

In 2000 the Department of Health (DoH), aware of the recent, rapid and largely unregulated developments that were occurring in regard to the UK being provided with widespread and accessible digital health information and advice services, decided there was a need to find out how the general public was reacting to these developments and what impact this was having on established NHS services. Clearly the very provision of so much information to a public that had been generally starved of such information was likely to have many repercussions, but nobody really had any data to say precisely what they would be. In consequence, researchers at City University were commissioned to undertake an evaluation, leading on a methodology (deep log analysis), particularly suitable for providing evaluations of digital roll-outs to very large and heterogeneous populations. The foresight of the DoH in spotting the need for this research has meant that, today, after four years of intensive research, it is to the health field that policy makers in other fields are now turning, to obtain an understanding of the impact of digital roll-outs in their areas.

The project set-out to monitor the take-up and impact of consumer digital health services on a variety of platforms, and consider the policy implications for the DoH and the health industry generally. The research was fortuitous in that the digital roll-out was only just beginning when the project started and we were thus in a position to evaluate events as they were unfolding. This, of course, proved particularly insightful. The roll-out is still going on and, if anything, at a faster pace. This explains the eventual length of the project (it was extended a number of times from its original 18 months, so that in total it stretched to nearly four years), and the fact that it is still continuing in the form of two follow-up projects[1].

This document is a summary report of the project: 'The web, the kiosk, digital TV and the changing face of consumer health information provision: a national impact study'[2]. However, during 2001, while we were working on the study, an opportunity arose to evaluate, also on behalf of the DoH, digital health interactive television (DiTV) in more detail than originally envisaged. This opportunity concerned the evaluation of four DiTV health pilot services. While this was actually a separately funded project, for which an individual report is available[3], plainly, it covered some of the territory of our original project.

[1] The digital health consumers of the BBCi website: a 'deep' log analysis, 2004; An evaluation of NHS Learn, 2003-2004

[2] The full report is available on CD from Ciber, Department of Information Science, City University, London EC1V 0HB

[3] Nicholas D, Huntington P, Williams P, Gunter, B. First steps towards providing the nation with health care advice and information via their television sets. An evaluation of pilot projects exploring the health applications of digital interactive television. Report to the Department of Health. London: City University, 2002 http://www.soi.city.ac.uk/organisation/is/research/ciber

Therefore, we have extracted data obtained from this study to enhance the coverage of DiTV in this report.

The rapid march of so many expensive, strategic health information systems clearly needs to be matched by ongoing evaluation and research into whether they are meeting their objectives – and, indeed, actually benefiting the public's health in some way. The field is so new, the knowledge vacuum so large and the task so important – there are not many matters more important than health - that it is vital to ensure that information systems are constantly reviewed and fully benefit from user feedback. This is what we have attempted to do with our report; to present and represent the users' voices (hundreds of thousands of them) through our deep log analysis and triangulated research methods (explained more fully in the methodology section of this report). Given the enormity of the task – the sheer number of platforms, services and users - a 'grip' on this digital phenomenon could only be maintained through a 'big picture', multi-method approach, with deep log analysis at its heart. Certainly we believe that the study constitutes the biggest and longest of its kind and provides the most substantial database of consumer digital information seeking in the health field ever assembled in the UK.

Given the duration of the project, the novelty and potential significance of the data, it was important to release our findings as early as possible. In consequence we have been publishing articles as data have emerged over the period 2000-2004[4]. A list of these publications – more than sixty - can be found in Appendix 1. A project of this size inevitably featured a large number of individual (and linking) studies. Thus there were studies of different health platforms, different digital health services, different types of user, different aspects of information seeking, the health impacts of digital information seeking and there were also comparative studies between different platforms and services. Additionally, different research methods were used, pioneered and developed. This report provides a consolidation and integration of the data, drawing together, for instance, data on gender, age, content, authority etc that has been scattered as a consequence of the article publishing programme.

Aims and objectives

The broad aim of the research was to explore the potential demand for and take-up of health information delivery through the newly and rapidly emerging Information and Communication Technologies (ICTs) in the consumer health area. Specifically, the ICTs identified for research were the touchscreen kiosk, DiTV and the Internet. A hybrid, a web-enabled kiosk, was also covered. A nation-wide, integrated approach to the investigation was required, because, as the DoH briefing document pointed out, only fragmented intelligence was to hand at the time, and this emanating from a number of scattered studies, all with different methods, orientations, and sample populations. This made it

[4] Some publishing will continue after February 2004 and details can be found on the ciber website, http://www.soi.city.ac.uk/organisation/is/research/ciber/

impossible to obtain the coherent, 'big' picture of what was going on that policy makers required. A secondary aim was to identify the barriers that might constrain the developments of such initiatives. Inevitably, there was also a strong digital information platform flavour to the work, as the working title of the research project discloses. For instance, which platforms would prove most suitable for certain kinds of content/service and audiences?

The more specific aims of the project were to:

1. develop a context-specific detailed understanding of how the general public interact with experimental ICT delivery of healthcare information;
2. provide a preliminary assessment of consumer reaction to ICT-based delivery of consumer health information, focusing especially on the InTouch with Health kiosk network.
3. develop a new framework for understanding the wider issues connected with ICT delivery of healthcare information: e.g. impact on healthcare professions, their training needs, possibilities for addressing health inequalities (i.e. information rich, information poor), the role of brand/importance of authority.

The specific objectives of the project were to:

1. refine and customise a methodology, developed at City University originally for the media field, for monitoring ICT consumer health use;
2. continuously monitor initial take-up of ICT services - so providing rich data on usage and changes in patterns of usage through computer log analysis;
3. assess and compare consumer attitudes to healthcare information delivery from various ICTs and other sources (print, oral etc.) through interview and questionnaire (e.g. regarding, for instance, satisfaction, authority, health impacts);
4. identify constraints and limitations of the various experimental systems in the light of objectives (2) & (3);
5. offer recommendations which will inform the further development of ICT healthcare delivery.

Scope/coverage

Target population. The study was concerned primarily with digital information and advice services (mostly the former) provided for the general public, the patient etc. and not those provided for health or medical professionals[5] - we know next to nothing about the former and have a much better understanding of the latter. Plainly, however, these services were available to health professionals, and a small part of the study explored the mediating role of health professionals. In recognition of the massive digital choice (and power) that the general public now has in the health field, their opportunity to 'shop' around for information and the pro-active nature of many of these services, the term 'digital information health consumers' is used throughout this report to more aptly describe them, the terms patient, customer or user all being felt to be inadequate to describe the individual's new found information powers. Of course, everyone in the UK can be considered to be a potential digital

[5] The ditv pilot study did include a training service (NHS Learn), which was intended for health professionals but this is still ongoing and will be reported separately.

health information consumer and, as indicated by the numbers reported in this report, their numbers are large and growing.

The information platforms and services. Three digital platforms – touchscreen kiosk, Internet and DiTV, were the subject of evaluation (plus the hybrid – the web-enabled kiosk), but, plainly, not all output/services from these platforms could be monitored. Only UK based services were covered, although, of course, in the case of the Internet, even for such an avowedly British institution as NHS Direct Online, the audience is inevitably international. In the case of kiosks, coverage was very comprehensive, certainly the most comprehensive analysis of kiosk usage produced to date in the UK, and probably the world. Kiosks from InTouch with Health and NHS Direct were covered, but as envisaged in our proposal the InTouch with Health kiosks were studied in more depth. In all, use at nearly two hundred and fifty kiosk locations was monitored and evaluated.

With regard to the Internet, two of the most popular (and contrasting) sites were studied in some depth – SurgeryDoor, a commercial site run by InTouch with Health, the owners of the kiosks mentioned above, and the Government funded NHS Direct Online website. In addition a smaller investigation of Medicdirect, a consumer health website run by practising medical doctors, was also undertaken because of some specialist services it featured.

DiTV is represented by four pilot services funded by the Department of Health (DoH) for a period ranging from four-six months during 2001[6]. The four DiTV pilots offered distinctive services. Although there were some overlapping features, each had many distinctive qualities. These included the type of platform on which the service was transmitted, the amount and nature of content, the presentation formats used, and the degree of interactivity offered. The four consortia were: Flextech Living Health, Communicopia, Channel Health and DKTV (A Different Kind of Television). Living Health transmitted a largely text-based health information service to Telewest cable television subscribers in Birmingham, together with an experimental GP appointments' booking service and InVision - a video nurse from an NHS Direct call-centre who appeared on the caller's TV screen as they spoke to each other over the telephone. Communicopia presented a mixed text-based and video-on-demand health information service branded as NHS Direct Digital and transmitted over a broadband telephone network operated by Kingston Interactive Television (KIT) in Hull. The operator also provided users with an interactive online medical records-keeping service, which focused on immunisation records. Channel Health presented a text-based information service linked to special broadcasts in its regular schedule on the Sky Digital platform. It majored on the theme of maternity issues and experimented, on a local basis, with a package of other interactive services for pregnant women comprising mainly e-mail support links between users and health professionals. DKTV, via a broadband service, offered interactive links to community health services together with videos on health issues accessible through the TV set.

[6] This was a separately funded study and full details can be found in the project report. Here we present an overview and the essential platform comparisons.

Time period. In all, the research reported here covered a period of nearly four years (April 2000 – February 2004), probably the longest continuous period that researchers have been able to study digital health information services of any kind - consumer or otherwise. The length of the study enabled data to be collated over a significant period of time to detect changes in use and perception, and this was done particularly in the case of kiosks. However, inevitably, given the restraints of funding and personnel, different platforms, services and information seeking behavioural traits were studied at various times throughout the period of the investigation as priorities emerged and research lines established.

Geographical coverage. The brief from the DoH was to investigate the situation in the UK, and to do this on a national scale to assist policy makers in their deliberations. The large number and wide geographical spread of the kiosks and the international reach of the web virtually guaranteed that. In the case of DiTV, one pilot service was broadcast nationally, a maternity advice programme entitled Bush Babies, broadcast by Channel Health, and the three others provided strong regional coverage (London, Birmingham, and Hull). Kiosks can be located to a postcode and this meant that kiosk use could be placed in a very local context. So our analyses offer a range of spatial health perspectives, from the international to the local.

Chapter 2 - Methodology

Introduction

A major objective of the research project was to develop effective methods for the study of the use and impact of electronic consumer health systems provided on a national scale, which could be used for continuous and longitudinal monitoring, and which other researchers could use for comparative purposes. We only provide here a brief summary of the methods used, for further detail see the full report and the list of our published journal articles (Appendix 1) and especially Nicholas et al (2003e, 2003i); Huntington et al (2002b); and Williams et al (2002c). A wide range of methods was used, which were, in some cases, pioneered by the team. This is particularly true of the kinds of log analyses undertaken. Indeed, as a result of more than three years of trialling, we have developed what we believe to be a unique set of methodologies, which provide for the most efficient and effective method of monitoring the use, satisfaction, and impact of using digital services - and not just by consumers, in the health field. We call the methodological mix 'deep log analysis', in recognition of the lead role log analysis plays, but it is not a purely quantitative methodology, a range of supporting qualitative methods are utilised too.

The precise blend of methods that constitute deep log analysis was determined by the fact that we were charged with producing big-picture analyses for policy makers and investigating a large, disparate, dynamic population who were being confronted with something extremely new, and about which they had minimal grasp/knowledge and as a result might have difficulties explaining what they thought or what they would do.

The individual methodological components used as part of the deep log analysis approach were as follows:

1. Server transaction log analysis
2. Survey (quantitative) methods, including
    - Postal questionnaires (open and closed)
    - Online questionnaires
    - Exit questionnaires
3. Qualitative exploratory work, including:
    - Focus groups
    - In-depth interviews
    - Participant observation
    - Non-participant observation
4. Action research

The great advantages of the digital logs are not simply their size and reach, although the dividend here is indeed a rich and unparalleled one. Just as important is the fact that they are a direct and immediately available record of what people have done: not what they say they might, or would, do; not what

they were prompted to say; not what they thought they did (the traditional domain of questionnaires and focus groups). This is especially important in an area such as digital information use, where issues are complex and people are all to easily shoe horned into answers manufactured by researchers.

We place and explain the log data through the use of questionnaires, interviews and observation. Logs map the digital environment and raise the questions that *really* need to be asked by questionnaire, interview and observation. This method produces a powerful triangulation of the data.

All this means is that we can provide big and rich pictures of information seeking behaviour, probably not seen before on such a scale. Some of these pictures might make us reconsider what has been discovered by previous studies of information seeking behaviour undertaken in not so sophisticated a digital information environment, employing less robust, user self-report methods. Certainly some of the data we have found challenges conventional wisdom. Indeed, we believe we are witnessing a paradigm shift in information-seeking behaviour in the health field.

It must be remembered that what is being evaluated throughout the report is not the use of a limited choice/option bibliographic system by intermediaries or digital libraries by health professionals, but the use of information and advisory consumer systems, which offer massive choice and high levels of interactivity, by end-users of every possible ilk. The really pressing challenge for the methods employed was to determine what people did when they are given so much digital freedom and choice in the health field and how this manifests itself in information seeking terms.

Methodological stages

For each platform and special study the following stages or steps were undertaken:

Stage 1. A comprehensive literature review was conducted to provide context, information on current developments, research issues and questions.

Stage 2. A transaction log analysis study and report was undertaken. The aim here was to get a big picture of what all users were doing online. This stage sometimes involved pilot work. All transaction logs were analysed using the SPSS statistical software package

Stage 3. Questionnaire surveys of users and, where possible, non-users were conducted. The aim here was to get a richer profile of users, analyse differences between users and non-users, assess outcomes, examine ease of use and to ask specific questions (or check data) raised in the literature review (Stage 1) and the transaction log study and report (Stage 2). All questionnaires were analysed using the SPSS statistical software package.

Stage 4. Finally, there was the qualitative analysis, which explored the issues identified above at a deeper level.

It is important to note that, although there is a logical progression in the methods outlined above, the steps are not necessarily chronological - each dataset informs and is informed by the others. User studies, for example,

(Stages 3 and 4) both feed off and feed into log analyses. Unexpected patterns of use, as revealed by logs, may prompt questions that that may not have been anticipated. In our study of touchscreens, for example, the low number of pages accessed by elderly users (many of whom did not progress past the menu hierarchy) prompted us to examine issues such as the level of navigational understanding, hand-eye co-ordination and whether the necessity to stand when using the system inhibited use.

List of individual studies

The four-year nationwide investigation inevitably consisted of a large number of individual investigations (more than 50) with different aims, sizes and durations and whose results were woven together to provide the big digital health consumer picture in the UK, which we portray in the report. Tables one to three show the broad aims and methods used for each investigation, and details the size of the sample and its duration. Each study is coded (Column 1) and this code is used when the study is referred to in the results section of the full report. The studies are grouped according to the platform being investigated. Within each platform studies are grouped according to the principal methodology involved. First are listed kiosk studies (Table 1), and these are followed by Internet (Table 2) and DiTV studies (Table 3).

Table 1: Individual studies conducted under the touchscreen kiosk research strand

Log Studies						
Study number and name	**Prime purpose**	**No of kiosks covered**	**Type of kiosk**	**Period covered**	**User sessions covered**	**Page views covered**
K1. Between Kiosk	Compared use metrics of 56 kiosks to compliment questionnaire	56	InTouch	10 months (Jan - Sep 2000)	116,647	961,162
K 2. Between Kiosk	Examined use metrics according to kiosk host location	21	InTouch	14 months (March 1999 - Apr 2000)	88,525	734,485
K 3. Trend study	Examined use metrics over time	20	InTouch	47 months (Nov 1996 - Sep 2000)	N/A	N/A
K 4. Nottingham study	Examined use metrics of a single kiosk to compliment questionnaire	1	InTouch	5 months Sept 2000 to Jan 2001	329	3,046
K 5. Edinburgh study	Examined use metrics of a single kiosk to compliment questionnaire	1	InTouch	12 months (Dec 2001 - Nov 2002)	2,115	15,595
K6. Conquest	Study of use at a location with more than one kiosk	3	InTouch	5 months (April - Aug 2001)	N/A	N/A
K7. Geographic	Explored regional differences in use: Stockport, Oxford, Penzance, Truro	4	InTouch	8 months (Sep 1999 - April 2000)	8,685	82,442
K8. Harpendon	Age and Gender study	1	InTouch	6 months (Jan - June 2000)	1,378	17,039
K9. Loughborough	To triangulate qualitative data	1	InTouch	2 months (Jul - Aug 2000)	742	6,289
K10. Web-enabled Airedale and Lynfield Mount, St. Lukes	First analysis of web-enabled kiosks	6	InTouch web-enabled	3 months (June to Aug 2002)	N/A	N/A
K11. NHS	Examined use metrics for different kiosk locations	123	NHS	1 month (Nov 2001)	46,394	306,302
K 12. Wakefield	Establish metrics for touchscreen kiosks evaluation	1	InTouch	3 months April to June 2000	N/A	17,076

Questionnaire only studies						
Study	**Type of**	**Prime purpose**	**Number of Locations**	**Type of kiosk**	**Period covered**	**Number of responses**
K13. Cornwall	Exit poll	Determine attitudes of kiosk users	2	InTouch	4 Months (Jan. 2000 to April 200)	174
K14. Nottingham	Online	Determine attitudes of ethnic and other kiosk users linked to log study	1	InTouch	4 months (Sept. 200 to Jan 2001)	329
K15. Edinburgh	Postal	Determine attitudes of adult kiosk users linked to log study 4	1	InTouch	Nov 2001	200
K16. Ethnic	Placed	Determine attitudes of non-English kiosk users	1	InTouch	Feb 2002	4
K17. Health professionals	Postal	Determine attitudes of kiosk owners linked to log study 1	50	InTouch	Oct 2000	50
K18. Walk in Centres	Exit poll	Determine attitudes to NHS & InTouch kiosks at Walk in Centre	1	NHS & InTouch	July –August 2003	N/A

Qualitative studies						
Study	**Prime purpose**	**Locations**	**Type of kiosk**	**Period covered**		**Number of responses/ participants**
K19. Qualitative: interview	Explore users and non-users' views/perceptions	various	InTouch	21.02.01 22.02.01 23.02.01 08.07.02	16.07.02 17.07.02 10.07.02	21 (4 users, 17 non-users)
K20. Qualitative: non-participant observation	Observe usage/reaction by different groups	various	InTouch	05.12.00 30.05.01 16.07.02 08.07.02 10.07.02	17.07.02 26.11.02 27.11.02 28.11.02	Approximately 300-400 people in various environments, of which approximately 20 were users
K21. Qualitative: participant observation/informal interviews	Observe usage/reaction by different groups	various	InTouch	30.07.02 31.07.02	01.08.02 02.08.02	informal interviews/participant observation with 13 pharmacy customers (1 user, 12 non-users) at one location; informal interviews/participant observation with 23 customers (8 users, 13 non-users) at another
K22. Qualitative: interview	Explore attitudes/opinions of health (and related) professionals	various	InTouch	11.07.00 13.09.00 12.09.00 22.09.00 18.10.00 17.11.00 21.11.00 01.12.00 05.12.00 13.12.00 01.02.01 21.02.01 22.02.01 23.02.01	22.05.01 12.06.01 14.02.02 25.04.02 28.05.02 13.06.02 19.06.02 30.07.02 31.07.02 01.08.02 02.08.02 29.10.02 01.11.02 26.11.02	Included: Practice managers, 9 Pharmacists 9 Doctors 16 Nurses 11 Pharmacist 2 Health promotion specialist 1

Table 2: Individual studies conducted under the Internet research strand

Log studies					
Study number and name	**Prime purpose**	**Type of Internet site**	**Period covered**	**User sessions covered**	**Page views covered**
W1. Exploratory	Initial piloting study	SurgeryDoor	1 month (April 2000)	46.07 sessions per hour	
W2. SurgeryDoor1	Comparison of NHS & SurgeryDoor	SurgeryDoor	1 month (November 2000)	30157	138862
W3. NHS Direct	Comparison of NHS & SurgeryDoor	NHS Direct	November 2000	68955	879344
W4. SurgeryDoor2	One year depth study	SurgeryDoor	12 months (Oct 2001 to September 2002)	381704	3680453
W5. Medicdirect	4 month study	Medicdirect	4 months (April – July 2003)	105449	929111

Questionnaire studies					
Study	**Type of**	**Prime purpose**	**Site**	**Period covered**	**Number of responses**
W6. SurgeryDoor3	Online	Attitudes of Internet users	SurgeryDoor	1 month (November 2000)	1068
W7. NHS Direct and their users	Online	Attitudes of Internet users	NHS	14 months (Dec 1999 to Jan 2001)	3374
W8. UK National	Online	National study of health Internet users and study of NHS Direct Online users	N/A	1 month (April 2002)	1300
W9. SurgeryDoor4	Online	SurgeryDoor/Internet users	SurgeryDoor	1 month (8th May to 9th June 2002)	500
W10. Medicdirect	Online	Medicdirect/Internet users	Medicdirect	3 months (8th April to 11th July 2002)	N/A

Qualitative studies				
Study	**Prime purpose**	**Internet site**	**Period covered**	**Number of responses/participant s**
W11. NHS Direct interview/ Observation	Examine usability issues	NHS Direct Online	23.05.01 24.05.01 25.05.01	19
W12. NHS Direct focus group interviews	Usage and attitudes towards NHS Online	NHS Direct Online	29.05.01 30.05.01 31.05.01	79
W13. SurgeryDoor interview/ Observation	Examine usability issues	SurgeryDoor	23.05.01 24.05.01 25.05.01 29.05.01 30.05.01 31.05.01	20
W14. NHS Direct Online Open	Qualitative study of use and user attitudes	NHS Direct Online	3 weeks, November 2002	42
W15. Interactive, online services	Examine usability issues between sites	Medicdirect	September 2003	6
W16. Interactive, online services	Email and discussion board analysis	Medicdirect	2000-2003	1029

Table 3: Individual studies conducted under the DiTV research strand

Log studies

Study	Prime purpose	DiTV service	Period covered	No. of users	Number of pages viewed	Number of pages viewed per day
T1. Living Health	Assessment of pilot service	Living Health	September 2001-January 2002	13,716	631,071	7,500
T2. DKTV	Assessment of pilot service	DKTV	August 2001 – November 2001	142	343	N/A
T3. Communicopia/ NHS Direct Digital (Hull)	Assessment of pilot service	Communicopia (Hull)	October 2001 – March 2002	1,965	115,645	1,500
T4. Communicopia/ NHS Direct Digital (London)	Assessment of pilot service	Communicopia (London)	February 2002 to May 2002	1,594	13,160	N/A

Questionnaire studies

Study	Prime purpose	DiTV service	Type	Period covered	Number of responses
T5. Living Health (1)	Assessment of pilot service	Living Health	Postal	06.01	450
T6. Living Health (2)	Assessment of pilot service	Living Health	Postal	09.01	723
T7. DKTV	Assessment of pilot service	DKTV	Telephone	10.01	92
T8. Channel Health (1)	Assessment of pilot service	Channel Health	Online (Internet)/Postal	11.01	436
T9. Channel Health (2)	Assessment of pilot service	Channel Health	Telephone	04.02	251
T10. Communicopia (Hull)	Assessment of pilot service	Communicopia	Postal	12.01	1,184
T11. Communicopia (London)	Assessment of pilot service	Communicopia	Online (DiTV)	01.02 - 05.02	80

Qualitative studies				
Study	**Prime purpose**	**DiTV service**	**Period covered**	**Subject/participant numbers**
T12. In-Vision	Interview/observational study - Staff attitudes, experiences	Living Health	29.01.02	8 staff members
T13. Information pages/In-Vision User study	Interview study Reasons for use / experience / opinions re information service/In-Vision (public)	Living Health	20-21.02.02	20
T14. Workplace Health	Interview study - Reasons for use / experience / opinions re Workplace health (public)	Living Health	14.11.01	8
T15. GP Booking Service	Interview study - Opinions of staff re viability / functionality	Living Health	05.11.01 20.11.01	4 staff members
T16. Bush Babies	Telephone interviews - Reasons for use / experience / opinions	Channel Health	03.02	9
T17. Video-on demand	Focus group / individual interview study, evaluating videos (content, presentation, usefulness	Video-Networks/Communicopia/KIT	05.02	5 Service users, 8 Elderly people, 3 Diabetics, 7 Health professionals, 4 Health information professionals, 12 General interest (i.e. 'lay') volunteers
T18. Consumer panel study	Focus group study - examining service content, presentation, usability	Communicopia	06.01 07.01 09.01 10.01	Approx 15 members of the public per session
T19. InVision telephone interviews	Reasons for use/experience/opinions	Living Health	10.01-12.01	27

More details on these individual research studies can be found in the main report.

Chapter 3 – Summary of findings, conclusions and recommendations

Introduction

This study was completed over a four year period and more than sixty peer reviewed academic papers have been published in order to quickly disseminate its results. In all three digital health platforms and ten major health services were evaluated in considerable detail. As a consequence the online behaviour of about 868,500 digital health consumers, who made 8,531,000 views to digital health related pages of various kinds, were put under the microscope. In addition 18 questionnaires surveys were undertaken, canvassing the views of a total of 10,413 users and non-users and, finally, just over 350 people participated in formal or informal interviews, or focus group discussions. Another 350 or so were observed in kiosk locations, using, looking at or, frankly, ignoring kiosks. We can truly say that this has been the biggest evaluation of the health information consumer ever, digital or otherwise.

Drawing broad conclusions from such a long, complex, detailed and wide ranging study is not easy, especially as we have been researching a new, rapidly growing and unstable information environment. The success of the digital health technology is there for all to see (the report provides copious evidence of this) and the evidence base that managers and policy makers need to hone and polish existing products and bring new ones successfully to the market has been put in place by this research investigation[7]. Indeed, we believe that this is probably the project's major contribution, filling the information space once inhabited only by anecdote, hype and obsolete data. That is why we have chosen to describe the report as a sourcebook, a source of data on virtually every aspect of digital consumer health information and advice. Inevitably, then, the report is very large indeed and in recognition of that we have also published it as a CD-ROM so people can easily navigate their way around it, and return to it as a reference work.

If the assemblage of this unique data set, represented in the full report by more than 400 figures and tables, is probably the project's major achievement, a close second must come the development of a methodology that enables health information managers and policy makers (not just researchers) to keep close track on the progress of digital health platforms and services, and, importantly, from a consumer's perspective. We have undertaken much methodological work, positioning the health field at the forefront of digital service evaluation, and only some of it is on show in the report itself because of size constraints. However, we have included on the CD the key methodological papers for those practically interested in log analysis in particular.

[7] The evidence has already been put to good use in the launch of NHS Direct Digital TV

Given the platform comparison theme so obvious from the title, undoubtedly one of the project's most important findings has been the extent to which the various digital information platforms and services have differed in terms of the kind of use they attracted, the people who used them and the purposes to which they were put. Any strategy for providing the general public with digital health information must take cognisance of this. It is certainly not a case of one size fits all.

The kiosk strand of the study enabled us to make comparisons between the same digital health information service in a number of different environments - geographical and institutional. Thus we have been able to compare usage, for instance, between Penzance and Oxford and surgeries and supermarkets. In regard to the latter the report is probably the first of its kind to examine in detail, and on a national scale, usage of health information systems outside of health environments, which is increasingly where the public get there health information from these days, and as our findings show there is a large variation in behavioural patterns and types of user.

And then there were the surprises, an inevitable outcome of rolling a digital service out to a huge, relatively unknown and unsuspecting audience. This, of course, underlines the need for ongoing evaluation of the kind undertaken here; the kind of evaluation that checks what people actually do before drawing up questions on why they did so or what they thought of it; informed questioning. The biggest surprise of all was surely the very high take-up of the health kiosks by children, for a whole range of reasons (good and bad, it must be added). But not far behind can be the huge impact that positioning of data has on information seeking in the digital environment, the impact of where the consumer searches from on what they feel happy to search (which we have called ‘search disclosure’ - described and explained later), and the lack of integration of kiosks particularly but all digital consumer platforms really into the routines of health practices and professionals (surely big opportunities are being lost here?).

3A Health kiosks

Three health information kiosks were investigated: InTouch with Health standard kiosks, InTouch with Health web-enabled kiosks, and NHS Direct kiosks. In all 238 kiosks were studied, covering well over a quarter of a million (264,800) user sessions and more than two million (2,143,400) page views. Six questionnaires were completed covering about 900 respondents, 300-400 people were observed and 102 interviews were completed.

A. 1 Key findings

The role of kiosks in providing health information was limited by a relatively poor take-up amongst the general public (although aggregated data are more impressive) and the limited static menu and content. Kiosks were also associated with limited outcomes. Kiosks in health settings were not really integrated into the routines of the surgery or hospital, and this must surely represent a big opportunity lost. Most of our findings relate to the use of the InTouch with Health standard kiosk, a kiosk that has now been superseded by a web-enabled version.

A. 2 Health outcomes

There were limited health outcomes associated with using the kiosk. The main outcome was that it helped users to understand more about their health conditions. However, the platform appeared to perform poorly with regard to changing their views about their condition, improving their condition, or dealing with the doctor. There was no evidence to indicate that information found substituted for a visit to the doctor. However, this might well reflect content limitations and usage barriers. With regard to the latter, as touchscreens are becoming more common in supermarkets and tube and railway stations, things might change.

A. 2.1 InTouch kiosks

- *Informative*. The greatest benefit obtained from the kiosk was in helping users to understand more about their condition. Ninety-four per cent of kiosk users said that the information had either helped a little (65%) or helped them a lot (29%) in becoming better informed about their condition. Thus, one user, who had a life-long (unspecified) illness, said that he was now in better control of his health condition.
- *Not a change-agent*. Less than 10% of those who had used a surgery-based kiosk said that they were helped a lot with regard to changing their view about their condition (8%), improving their condition (8%), or dealing with their doctor (6%).
- *Not a substitute for the doctor*. The kiosk was not found to be used as a substitute for a visit to the doctor. This was hardly surprising as the kiosk

was located in the doctors' surgery and users might as well go to the doctor as to make a journey to the surgery to use the kiosk. We did not find the kiosk to be an important supplement either, and that is not so easily explained or justified.

A. 3 Use and users

Kiosk use was comparatively low, but was greater in locations where there was active support and promotion at the kiosk location, where users had prior experience of using technology and where there was a greater 'flow past' rate of potential users.

A. 3.1 InTouch kiosks

- *Low reach*. Reach for kiosks, the percentage number of potential users using the services, was estimated at between only 14 to 17%.
- *Service penetration poor*. On average, search sessions lasted approximately one and half minutes. Approximately 38% of search sessions featured three or fewer page views, 44% contained between four and 10, and 19% featured 10 or more page requests. The high rate of failed search sessions viewing three or fewer pages meant that many users did not find anything and provides the reason for such a low average search session time.
- *Greater acceptance by the young, women and regular patients*. Younger people were more likely to have used the kiosk: 17% compared to 8% for older people. Also, while 64 % of those aged 16 and over had heard of the kiosk, only one in eight (13%) of them had actually used it. Women were more likely to have used it compared to men: 16 % compared to 7%. Not surprisingly those visiting the doctor more regularly in the last 12 months were also more likely to have used the kiosk.
- *A socio-economic dimension to use*. Neighbourhoods with a high incidence of mortgages generally had a lower kiosk use rate. This group may have access to alternative sources of health information, and do not have such a need for a kiosk to provide them with their information.
- *Technologically literate*. Whether the user had prior experience of using technology was found to impact on use and the willingness to use the system. Previous experience, for instance, with microwaves and computers lead to higher kiosk use. Those who used and felt comfortable with information technology were more likely to have used the kiosk: 21% of computer literate users (aged 16 and over) had used the kiosk compared to 6% of users who said that they avoided computers. Kiosks sited in areas with a high incidence of microwave ownership - a possible crude indicator of electronic familiarity and/or competence - tended to search for longer.
- *Curiosity played an important part in kiosk use*. Women and skilled workers were more likely to be curious users. These users were interested in general health matters, such as healthy living.

- *Partnership with other health services lead to heavier use*. Those people who were told to use the kiosk were likely to view a greater number of pages, had a longer page view time and print off more pages.
- *Web-enabled kiosk not the panacea*. There was no significant evidence to suggest that web-enabled kiosks attracted more kiosk users than the standard, stand-alone kiosk, despite the greater health information choices offered. Use was simply spread out more widely and thinly.
- *Staying power questionable*. Kiosks enjoyed a high level of use when first introduced, and this could be put down to their novelty and accompanying publicity. Typically use peaked between four to six months after installation; thereafter use tended to decline, and in the long run this decline could be quite substantial. This occurred because people were not returning to use the kiosk - often one session was sufficient to obtain all the kiosk had on a subject. Hence the roll-out of the new web-enabled kiosk to overcome this. There was also evidence to suggest that kiosks merged into their institutional surroundings and largely went unnoticed. Many people interviewed at various locations simply had not noticed the kiosk.

A. 3.2 InTouch kiosks

- *Four distinct trends*. There was evidence of at least four types of trend in kiosk use over time. An increase after installation followed by a slow long term decline (declining), an increase after installation followed by a decline to a relatively stable use pattern (steady); an increase after installation followed by a decline then an increase (increasing); and a no trend pattern (flat). The most typical pattern was an increase after installation followed by a decline.
- Kiosks in hospitals and surgeries were subject to a similar pattern of use, suggesting the health context was the driver here: a sharp increase in use was followed by a decline, the subsequent decline variously tailed off to a steady state, continued or, as in one case, subsequently increased. This pattern was not characteristic of kiosks in information centres, where use tended to fluctuate.

A. 4 Kiosk location

Information centres and hospitals were good places to locate a kiosk and did well in terms of session length and overall user numbers. Kiosks in public places did well in terms of users as a result of the numbers passing the kiosk; however, more than the expected number of users terminated their sessions early. Kiosks in surgeries performed poorly, both in terms of user numbers and session time. The main reasons for the differences in use between kiosk locations were: 'search disclosure', time anxiety, information authority, cursory use and poor integration of the kiosk into its host organisation.

A. 4.1 InTouch kiosks

- *Information centres and hospitals were good places to locate a kiosk.* Kiosks located in information centres and hospitals performed well in terms of the duration of search sessions and the number of sessions conducted per hour. Kiosks in hospitals were less likely to be used by the under 15 year olds (19% compared to an overall average of 31%) and more likely to have users aged between 35 and 55 (28% compared to 20%).
- *Surgeries were poor locations.* Surgery kiosks performed poorly across the board - in terms of users numbers, session time and number of page views.
- *Supermarket and pharmacy kiosks were characterised by short sessions.* Users at these locations were more likely to finish their session early; about 40% of users just viewed three pages or under compared to other locations. This was not sufficient to reach any information content.
- Reasons for locational differences:

  1. 'Search disclosure'. People were put off using the kiosk in situations where they could be observed and so lacked privacy. As mentioned above, we have termed this 'search disclosure'. Just under half of non-users (47%) said that they did not like the idea of using a surgery kiosk because it was in a public place. One user commented that 'If it is positioned in such a way that someone can see over your shoulder I would not want to use it'.. 'Search disclosure' is thought to impact most strongly on the use of kiosks in surgeries, some hospital waiting room areas and kiosks located in front of a pharmacy or shop queues. Users preferred to use the kiosk in 'designated information areas', such as in Information centres, or in such designated areas in surgeries and hospitals, where they cannot be observed, or where use was considered socially acceptable.

  2. Time anxiety/uncertainties. Users were subject to time uncertainties, more apparent at the doctor's surgery or pharmacist where users could be called in at any moment, and naturally they wanted to leave the surgery or pharmacy quickly afterwards.

  3. Information authority. Interviews suggested that as medical professionals, who were perceived to provide the truly authoritative data, were being consulted there was little point in consulting other information sources such as a kiosk. This was true for kiosks located in surgeries.

  4. Cursory use. Some users abandoned their kiosk session quite early and this might be because they did not want to engage with a system with which they had little prior experience. This impacted on kiosks located in public places such as supermarkets.

  5. Integration of kiosks in health environments. Generally little thought appears to have gone into the integration of the health information kiosks into the normal routines of health environments. However, where kiosks were actively promoted by health staff, this integration was shown to impact positively on use, firstly because there was a culture in promoting the kiosk and secondly there were people on hand to help people use the system. Few kiosks were embedded in their location. Health staff have to be made aware of the impact that

information systems can have for patients. It may also be useful for such systems to be networked to the surgery consulting rooms themselves, so that doctors can be more pro-active. This may be difficult in regard to time availability, but current practices - often just letting the patients 'get on with it' - are hardly acceptable, and lead to under-exploitation of a potentially valuable health aid. .

A. 4.2 NHS kiosks

- *Good places for kiosks.* The top four location types, ranked by the number of pages viewed in a day, were docks, hospitals (confirming the InTouch data), walk-in centres and supermarkets (Kwik save). Kiosks located in hospitals and walk-in centres attracted longer page view times, saw a greater number of pages viewed in a session and recorded longer session times. Kiosks in these locations tend to have a high throughput of potential users and, furthermore, offered an environment that was helpful to the overcoming potential issues related to understanding a new enquiry system for most users, in regard to both menu navigation and terminology.
- *Kiosks in supermarkets and non-medical locations provided mixed results*. Kiosks located in supermarkets (Kwik save), pharmacies and docks performed relatively poorly and scored badly on the duration of search sessions and number of pages viewed in a session. Kiosks in public places, like docks and supermarkets, did well in so far as they offered a large potential body of users, but use appeared to be of a cursory, inquisitive and passing kind.
- *Not very suitable locations*. Kiosks located in Citizens' Advice Bureaux (CAB), community voluntary services and youth hostels / centres performed poorly. This may be because the location of the kiosk in such places is not conducive to personal health searching ('search disclosure' factors) or that there was little health information needed or wanted by the characteristic user groups at these locations (i.e. young people in the case of youth organisations).

A. 5 Categorising users

A. 5.1 By age and gender

Up to four in every 10 kiosk users were children, under 15 years old. This varied by location and was much lower in hospitals. Nevertheless this was an astonishing result for a technology very much targeted at the elderly, infirm and unwell. Older users found kiosks difficult to use. This is thought to relate, partly to their lack of experience in using technology, resulting in a disinclination to experiment. Also noted was a far greater willingness by elderly people to rely on medical professionals for advice. Generally, women were bigger users of the system than men.

A. 5.1.1 InTouch kiosks

- *Children the majority user group*. There was significant use of the kiosk by the under 15 year olds but this varied by location. Thus, while 41% of pages viewed at GP surgeries were accounted for by the under 15s, this

group accounted for about 25% of pages viewed in hospitals. Of course, children are much more likely to visit surgeries than hospitals.

- *Elderly people faired poorly*. Users aged over 75 were less likely to search deeply compared to other users. Just under half (45%) of those aged over 75 viewed just one to four kiosk pages compared to about a quarter of those 75 and under who did so. The over 75's were found to conduct shorter sessions and spent less time viewing a page compared to other age groups.
- *Elderly people were less satisfied, less comfortable and less proficient.* They were less likely to say the kiosk answered their health questions. This is probably to do with the fact that those aged over 75 were approximately eight times less likely to find the system very easy to use as compared to younger users. In fact, elderly people were more likely to find the system difficult to use, were less likely to find an information page and, unsurprisingly, more likely to find the system 'useless'. Older users were more likely to report that they did not use the kiosk because they did not feel comfortable with the technology: 68% of over 55 year olds said this compared to 13% of those aged 16 to 35. There was evidence that older users were more likely to say that they did not like using the kiosk in public place: 56% of over 55 year old non-users agreed with the statement that they did not use the kiosk because it was located in a public place compared to 32% of non-users aged 35 and under.
- *Not good with technology*. Older users were more likely to report that they did not use the kiosk because they thought that they were not very good with technology: 68% of those aged over 55 agreed with the statement, compared to only 13% of those aged 16 to 35.
- *The elderly preferred going to the doctor for their information*. Interviews with elderly patients indicated that they were more inclined to rely on information from their doctor and to accept that unquestioningly. Health professionals at various kiosk sites felt that it was more difficult to encourage older people to seek health information generally.
- *Middle-aged men used kiosks*. Men aged between 56 and 75 were more motivated kiosk users. They were more likely to find an information page and to print off a page; in addition they were likely to have a longer session time and a longer page view time compared to other users.
- *Younger females were significant and satisfied users*. Females under 55 were more likely to find an information page and to print off a page compared to other users. In addition they were likely to view more pages in a session, and conducted longer sessions. Women were also found to be around three times more likely than men to say that the information found on the kiosk answered their question.

A. 5.2 By ethnicity

Place of birth had an impact on perceived ease of use. However, the variable was found to be associated with other variables including age, gender and socio-economic status. There was a cultural effect but further research is needed to isolate the exact impact of this on kiosk use.

- Those users born in the UK and who were employed, as skilled workers were just under twice as likely to find the kiosk very easy to use as compared to non-UK born users, and UK born unskilled users.

A. 5.3 By disability

Health professionals acknowledged that the InTouch with Health kiosks were difficult for wheelchair-bound people to use as they were designed for operation at a standing position. InTouch with Health themselves have recognised this problem, and their 'new generation' web-enabled kiosks are all made to be suitable for wheelchair users. NHS kiosks can also be used at seat (i.e. wheelchair) level, Other than this, the kiosk systems evaluated had no provision of any kind for the disabled.

A. 6 Health topics sought

Possibly of most interest is what health topics people searched for when they were provided with a comprehensive digital information system, like a kiosk. Not surprisingly, a wide variety of health topics were sought. Topic use varied by location, time of day, gender and age. There was indicative evidence that users were content subject-sensitive, suggesting a need to match content and menu prominence to location and information needs (this is a direct influence of choice). Furthermore, users did not seem to be moving between the health sections. Thus users of surgical operation pages were poor users of healthy living pages.

A. 6.1 InTouch kiosks

- *Popular pages*. The six most popular pages viewed were good eating, alcohol, exercise, weight, cancer prevention and backpain-strain. The top 15 pages accounted for 29% of all health page views.
- *Topic choice and location.* People sought different topics in the various kiosk locations; more surgical pages were viewed in hospitals while more general health pages were viewed in information centres.
- *Age and topic selection*. For the Under 15's what proved to be important was travel, health news, healthy living and the A-Z of the NHS. This was also true of the age group 16 to 35, although travel had become far less important, but use of support groups and medical conditions become more important, and it is of interest and relevance that these two health topics appeared together. These last two health sections were also regarded as important by the 36 to 55 year olds. This age group saw travel as being the least important topic. For those users over 56 surgical operations and the health directory were the most important sections.
- *Topic selection by type of enquiry.* Those with a specific enquiry were about one and half times more likely to look at a medical conditions page compared to either curious users or those told to use the service. Those with a specific enquiry were four times less likely to use a healthy living page and about eight times less likely to use the travel section compared to curious users. Those told to use the service were just under twice as

likely to view a surgical operations section page and half as likely to view a healthy living page and 10 times less likely to view a travel section page compared to curious users.

- *Influence of choice*. There was strong evidence linking kiosk location to type of information consulted. For example users at one specialist mental hospital were more likely to visit mental health web sites (web-enabled kiosks) and view mental health kiosk pages. This indicates a location link to the specialist nature of user needs and this should be reflected in the kiosk menu structure and content.

A. 6.2 NHS kiosks

- *The most popular health topics*. The six most popular pages viewed were drinking while pregnant; healthy eating, rashes, maintaining a healthy weight, managing stress and quitting smoking were also popular.
- *Under used content*. An even higher concentration of use was found. The top 15 pages accounted for 38% of all health page views, indicating that much of the material on the site was accessed very infrequently.
- *Losing weight of interest*. In terms of page view time, the page on losing weight was viewed the longest followed by itchy rashes and adult chest pain. All three were viewed for longer than half a minute.
- *Less variation*. Surprisingly, there was less variation in the subject of pages viewed between locations compared to InTouch with Health kiosks, however this might reflect the more limited content.

A. 7 Ease of use

Users with prior experience of using technology found the kiosk easier to use. Ease of use impacted on the ability of users to find an information page and in their view on whether they found the kiosk useful. Most users who did not find what they wanted went elsewhere. However, this was not true for those finding the kiosk difficult to read; these users did not go elsewhere and whose needs were therefore not satisfied.

A. 7.1 InTouch kiosks

- *Self-starters*. Most users, 61%, said that they just started using the kiosk without being told to do so.
- *Straightforward to use*. Three quarters of users said the kiosk had easy menus either all of the time or some of the time, while 80% thought the kiosk easy to understand, read, navigate and had easy touchscreen areas.
- *Ease of use and satisfaction went hand-in-hand*. People finding the system hard to use were less likely to locate an information page and were about 10 times more likely to say the information found was ‘useless’. Those respondents who could not find their topic easily and who found the content difficult to read were less likely to say they had their question answered.
- *Some people have fundamental problems*. In the main, users whose questions were not answered by the kiosk sought information from another

source. This was not true though of those finding the kiosk not easy to read. These users were 12 times less likely to have had their question(s) answered by using the kiosk. However, there was no evidence to suggest that these users then went on to find an answer to their questions elsewhere, suggesting that these users may need to be specifically targeted.

A. 8 Non-use

The reasons given for not using the kiosk were that people preferred information from doctors and nurses, they felt they were not adept with technology, they preferred other information systems (such as the Internet), they did not feel that the kiosk location offered them the necessary anonymity required to search for health information, or that they just had not noticed the kiosk.

A. 8.1 InTouch kiosks

- *Kiosk use tended to be a minority activity*. Nearly nine in 10 patients of an Edinburgh surgery over 16 years old were non-users.
- *People preferred their doctor as a source of information*. Three-quarters of non-users said that their doctor or nurse told them all they need to know; hence they did not need to bother with the kiosk.
- *Low levels of ICT literacy was a barrier to use*. Forty-two per cent of non-users did not use the kiosk because they thought that they were not very good with technology.
- *The Internet preferred by younger users*. Twenty-two per cent of non-users said that they preferred to use the Internet to search for medical information. Significantly, younger users were more likely to report this. Thus, one in three users aged 16 to 35 reported this compared to one in twenty of those aged 56 and over - a significant finding.
- *It was not obvious what that the kiosk was or that it could be used by the public*. Well over a third (36%) of respondents that attended a surgery which had a kiosk did not know that the surgery had a heath information kiosk. On-the-spot interviews with pharmacy and supermarket visitors and formal interviews with GP patients at kiosk locations confirmed that many people were not aware of the nature of the kiosks, despite posters and notices indicating that it was a health information system for public/patients and exhorting people to use it. This may reflect on the limited involvement of health staff with kiosks.
- *'Search disclosure'*. Interviewees at various kiosk locations indicated their reluctance to use a system located in a public place, as described above in the section on 'Location'.
- *Cultural barriers*. There is a cultural barrier preventing people seeking health information for themselves, both in terms of disinclination to use electronic systems and to seek health information from any source. Elderly interviewees indicated that their age group, in particular, were more inclined to rely on information from their doctor and to accept that unquestioningly. Health professionals at various kiosk sites felt that it was

more difficult to encourage older people to seek health information generally

A. 9 Impact/involvement of the health profession

Kiosks appear to have had little impact on the work of health professionals, and reception and managerial staff were found to be inconvenienced by their introduction. Little thought was given by staff to the upkeep of the kiosks when they were purchased. Replenishing paper, trying to fix paper jams, and staying at work late to wait for technicians all created much ill-feeling among practice managers and receptionists. What came out strongly from the research was that the consequences of providing an electronic system for patients had not generally been thought through, and this risks the viability of the kiosk.

A. 9.1 InTouch kiosks

- *Proactive programmes work*. Locations where a health professional helped patients to use the kiosk had a higher number of users per hour.
- *Current integrating aids not working*. The 'Patient Information Prescription' (PIP) pads (an attempt to integrate kiosks in surgery routines) were virtually unused, and there was little evidence of doctors referring patients to the system or searching it with them. Indeed, they expressed concerns that they might appear to waiting patients to be abrogating their consultation duties by being seen 'messing around on the kiosk', even if this was with and to help the consultation process.
- *Nurses see a role for themselves*. Nurses were more proactive than GPs, and evidence was found to suggest that they valued information as an important part of a patient's consultation and recovery programme.

3B Health websites

Three health information sites were evaluated in depth (but not all to the same level of detail[8]): SurgeryDoor, a commercial site; NHS Direct Online, a government website and Medicdirect, a commercial website having the distinction of being run by medical doctors. In all, approximately well over half a million people (586,300 user sessions) and five and a half million (5,627,800) page views were investigated. Additionally, five questionnaire surveys were undertaken, covering about 6,300 respondents, approximately 1,000 e-mail and discussion board messages were analysed and around a 100 people participated in interviews, focus groups and observation. We believe this to have been the largest and most robust investigation of health websites mounted in the UK.

B. 1 Key Findings

Internet users did use the platform for health information. Positive outcomes were associated with more experienced and educated use of the Internet. The Internet had particular problems around trust, authority, an ability to find sites and to critically review content that stems, in part, from the unorganised, but abundant, array of available information sites. However, health users utilised the Internet for a variety of services and purposes; many actively visited a number of health web sites and participated in online activity such as support groups. There was evidence that some Internet health use related to personality and life style choice, such as that related to alternative medicine and to check on health information for a friend or relative. However, those currently suffering, those with a long term condition and those seeking general health information did use the Internet.

B. 2 Health Outcomes

The use of health information on the Internet was associated with positive health outcomes. Most users were helped in understanding more about an illness or injury, however users with diverse health information needs appeared to have had these needs met. There was no evidence that people who used the Internet were more likely to have used information found as a substitute for a visit to the doctor compared to non-users, except for those who said they were 'very interested' in the Internet.

B. 2.1 Health websites in general

- *Internet users were unanimous in regard to the direct benefits digital health information brings*. Ninety-three per cent, of a mainly broadsheet

[8] SurgeryDoor was studied in most depth and Medicdirect was largely investigated for the interactive online services it offered, including the use of support groups, e-mailing a doctor and online consultation services and in regard to a special investigation of 'search disclosure'.

newspaper sample, said that the information found had helped in understanding more about an illness or injury and a relatively high proportion (57%) of respondents said that the information found was sufficient for them to act in a way to improve their health. Fifty-eight per cent said that information found enabled them to help someone else, while 51% said that it gave then information that the doctor had not furnished. Forty-six per cent of respondents said that the information found had confirmed what the doctor had told them, while 38% said the information found had given reassurance about recovery from an illness or injury. One quarter (26%) said that the information found had affected their decision about whether to see a doctor.

- *Health outcomes*: Approaching a half of respondents (45%) said that information found had caused them to think about the things they eat. Forty per cent said that information found had made them more aware of the need to live a healthy life, while 38% had said it encouraged them to take more exercise. Just under a third of users said that the information found led them to eat more fruit and vegetables while 26% said that it had encouraged them to relax more. Internet information seems to have the least impact on smoking and drinking habits. Only 4% of respondents were influenced to give up smoking, while 11% said that the information found had influenced the amount of alcohol consumed. Six per cent said that the information found had caused them to go for regular health checks with my doctor.

B. 2.2 SurgeryDoor

- *Better informed people*. The greatest reported outcome was that users felt better informed: 97% of respondents said that they were either helped a lot (74%) or helped a little (23%).
- *There were many other benefits*. Users were helped a lot with regard to: changing their feeling with regard to their condition (39%); with dealing with their doctor (41%); improving their condition (11%). Patient interviewees confirmed that Internet research helped them prepare for medical consultations and that they felt on more equal terms with their GP.
- *Sizeable minority used information as a substitute for visiting their doctor*. More than one in four people said that Web-based information found proved an alternative to seeing the doctor. However this is no different from the expected percentage of health information users saying so in regard to alternative information sources, though respondents 'very interested' in the Internet were twice as likely to use health information in this way compared to respondents only 'fairly', with 'little' or no interest. Those aged under 55, those who founded trusted information and those visiting more than one site did better on this outcome. Compared to those in full time employment those in full time education were just under four and half times more likely to describe a medical condition to an online doctor to get advice, full time housewives were about four times more likely to while those who were unemployed were about two times more likely.

B. 2.3 NHS Direct Online

- *Promiscuous users benefit most*. Those respondents who visited a combination of websites that included NHS Direct Online reported better health outcomes than those who had only visited NHS Direct Online on its own or who had never visited this site.
- *NHS Direct Online only users*. Those respondents that only visited NHS Direct Online seemed to under-perform compared to those who either never used NHS Direct Online or those using it in combination with other sites, at least with regard to the following health behavioural changes: eating more fruit and vegetables, exercise, relaxation and a healthy lifestyle.

B. 2.4 Online personal health services

- More positive health outcomes were associated with those respondents who participated in online support groups, and the least number of positive health outcomes were associated with those who maintained e-mail contact with a doctor or surgery. Respondents who had used online support groups were much more likely to have found information to help them understand more about their condition and were less likely to say that information found had had no effect. Furthermore, they were more likely to have found information that substituted for a visit to the doctor: 41% said so compared to 29% of those who had not used an online support group service.

B. 3 Use and users

Just under a third of Internet users have used a health site at sometime. NHS Direct Online appeared to be the most used health site in the UK, and by some margin.

B. 3.1 SurgeryDoor

- *A comparatively small user base*. SurgeryDoor attracted approximately 2,000 users per day and about 8,500 pages were viewed per day. SurgeryDoor attracted about half the number of users as NHS Direct Online did.
- *Site penetration*. On average search sessions lasted approximately five minutes. Approximately three quarters (74%) of user sessions featured three or fewer page views, 20% contained between four and 10, and 6% of featured 10 or more page requests. Because of caching and the use of search engines that can take users to their selected page without using on screen site menus, page penetration is likely to be underestimated - in other words people made more use of the site than calculated.
- *Patient intermediaries*. Less than half (48%) of users were searching for themselves, 17% for a partner, 16% for a child, 14% for a relative and 5% for a friend. It is difficult to think of any other form of information seeking in which the searcher is normally searching for someone else. These users

may see themselves as health information gateways for an inner circle of relatives and friends. This needs consideration by system designers.

B. 3.2 NHS Direct Online

UK's most popular health website. NHS Direct Online proved very popular with about two-thirds of all Internet health users having visited the NHS site. However, it should be noted that this study was biased towards broadsheet newspaper readers. Guardian readers were twice as likely to use NHS Direct Online compared to respondents who did not read the Guardian, while Sun readers were half as likely to do so compared to non-Sun readers.

B. 3.3 Online personal health services

- *Health support groups were popular*. One fifth of Internet health users were involved themselves in online support groups.
- *Web communication with health services was a minority activity*. 17% of Internet health users employed e-mail or went to a web site to communicate with a doctor or doctor's office.
- *Few online consultations*. Just 15% of Internet health users sought online consultation with their doctor

B. 4 Returnees

The number of people returning to a site, an indicator of satisfaction and loyalty, was generally poor, but par for the Web. In part this was due to information promiscuity, users flicking from site to site to see what is on offer. Health information providers should be aware that they are not running self-contained services, which users will obtain familiarity with as a result of frequent use, and that they will always be compared with other sites.

B. 4.1 SurgeryDoor & NHS Direct Online

- *NHS Direct Online had a comparatively loyal following*. SurgeryDoor visitors were less likely to return within the month. Eleven per cent of users returned within the month as compared to 16% of NHS Direct Online users. Generally, 95% of SurgeryDoor users said that they had re-visited sites either often (62%) or sometimes (33%). However, users may well be revisiting sites other than SurgeryDoor. Of those NHS Direct Online users who had visited the site again, approximately twice as many users aged between 65 and 74 had revisited again compared with the other age groups. Older users were more loyal.
- *NHS Direct products were used tandem*. Respondents who had used NHS Direct Online before were more likely to have also phoned the NHS Direct Online telephone service

B. 4.2 Medicdirect

- Those people coming in via an external link were found most likely to return to the site. Over half (57%) of this group visited two or more times compared to about 9% of those coming in via a search engine, and 16% via other referrer groupings. This implies that users who did not use a search engine, but used a directory link or remembered the site address, were more likely to revisit.

B. 5 Promiscuity

Internet users only sometimes revisited sites but they did visit a number of (varying) sites regularly to gather information. They have developed a bouncing/checking (rather than repeat) form of behaviour as a consequence of the huge choice they are offered. Search engines promote this form of behaviour. For the digital health consumer this means they can compare information and to find information or an information presentation that best fits their needs. It should be noted that better health outcomes were associated with users visiting a number of sites; hence this type of behaviour (contrary to perceived wisdom) is efficient and is associated with better health outcomes.

B. 5.1 SurgeryDoor

- *Most people searched more than one site*. Nearly all respondents, 92%, who did visit more than one site said that they did so to compare information, 72% said that no one site would inform them sufficiently, while 64% confirmed that they just liked to jump from site to site.

B. 5.2 NHS Direct Online

- *Health surfers failed to find NHS Direct*. Respondents just browsing the web for health information were half as likely to be an NHS Direct Online user. It is believed that NHS Direct Online performed poorly in terms of its digital visibility in regard to its appearance on the listing of sites returned to users as a result of a search engine health topic enquiry. Most users coming in via a search engine had expressly set out to find NHS Direct Online and had typed in some variation of the NHS Direct Online name.

B. 6 Location

Users preferred accessing sites that originated in their own country. This is probably not just a feature of digital health information. However, there was a substantial amount of use made of UK sites by foreign nationals (especially Americans), accounting for around half of all use.

B. 6.1 SurgeryDoor

- *UK users were in the minority but were heavier users*. It was estimated that 35% of users and 70% of use of SurgeryDoor come from the UK. There was evidence that users preferred accessing sites that originate in

their own country. People coming from abroad were not making very good or deep use of the site.

- *North South Divide*. In an on-line study, 21% of respondents were found to have come from the South East of England 16% from Central England, 14% from the North West England and 13% from Greater London. Areas recording fewer respondents were: 10% from the North East of England and 10% from Scotland.

B. 6.2 NHS Direct Online

- *Libraries important for the elderly.* Public access computers (i.e. in libraries) were an important means of accessing the site by the over-75s, who may be less likely to have computers at home.

B. 6.3 NHS Direct Online & SurgeryDoor

- *Less home users*. The NHS Direct Online site attracted a greater percentage of commercially registered Internet users: 52% compared to 43% for SurgeryDoor. However, NHS Direct Online had a smaller percentage of users connecting via Internet providers like AOL online: only 17% compared to 26% for SurgeryDoor. Individuals were more likely to connect to the Internet via an Internet provider and this argues that SurgeryDoor attracted a higher percentage of home users.

B. 6.4 Medicdirect

- *Just over half of all users were British*. It was estimated that 51% - 57% of Medicdirect users were actually based in the UK; 24% - 36% were located in the US; about 12% were located in Australia, 8% in Canada.

B. 7 Categorising users

NHS Direct Online users were more likely to: be living as a couple, have a greater income, be broadsheet newspaper readers, and be more interested in staying fit and healthy compared to non NHS Direct Online users. Housewives, as well as those in poor health, appeared to be users of online services. Surprisingly, perhaps, those over 65 seemed willing to e-mail their doctor.

B. 7.1 By various personal and consumer characteristics

B. 7.1.1 NHS Direct Online

- *Families used the service most*. Respondents who were married or living with a partner were about twice as likely to be NHS Direct Online users as compared to single widowed or separated respondents.
- *Broadsheet readers were the site's big users*. Respondents who read the Sun were about half as likely to be an NHS Direct Online user, while Guardian readers were just under twice as likely to use the service.
- *Problems with digital visibility*. Respondents just browsing for no health site in particular were half as likely to have found the NHS Direct Online site.

This is thought to reflect the poor showing (digital visibility) of NHS Direct Online on the list of search engine found sites.

B. 7.1.2 Online personal health services

- *Support groups***.** Full time housewives were about five times more likely to participate in a support group as compared to full time workers. Those in poor health were about 10 times more likely to have participated in an online support group compared to those in only fair health, good health or excellent health.
- *Online advice from an online doctor*: Those in full time education were just under four and half times more likely to describe a medical condition to an online doctor to get advice. Full time housewives were about four times more likely to seek a consultation from an online doctor while those who were unemployed were about two times more likely, compared to full time workers. Respondents searching for a sensitive topic that they did not want to discuss with a health professional were about twice as likely to use an online advice service.
- *Emailing the doctor*: Those aged over 65 were 4 times more likely to have e-mailed their doctor. Those in poor or only fair health were twice as likely to e-mail their doctor compared to those in good health.

B. 7.2 Users by health interest

Four types of users were identified: 'alternative remedy' user; 'staying fit and healthy' user; 'keeping up to date' user; and 'I'm ill but want to know more' user.

B. 7.2.1 SurgeryDoor

- 'Alternative remedy' users tended to be women under the age of 34 and further tended to search on behalf of a friend or child.
- The 'ill but wants to know more' type of user was found to relate to the user's current health status and whether they were carers or not.
- 'Staying fit and healthy'. These users were currently healthy and were interested in depth of content; they were likely to be NHS Direct Online users rather than SurgeryDoor or Net Doctor users.
- 'Keeping up to date'. Those currently in poor health and with a long-standing illness fell into this group.

B. 8 Finding Health Sites

B. 8.1 By search engine

B. 8.1.1 SurgeryDoor

- *Finding health information by search engines was very common*. Eighty eight per cent of respondents using online methods for obtaining health information either said that they had often (50%) or sometimes (38%) found health information by using a search engine.

- *What they did online*. Most respondents said that they read the summary outline information returned by a search engine to see if the site was worth visiting: 44% said that they did this all the time and 43% said that they did this most of the time. Those with a university education were more likely to read the summary information all the time: 55% did. Only 15% of respondents said that they would scan the list of sites returned by the search engine for sites previously visited all the time. Users with an O level or GNVQ equivalent were least likely to read the summary information of a search engine: 38% had compared to 55% with a university education or above.

B. 8.1.2 Medicdirect

- *Search engine users left quickly*. Just over a third (37%) of users found the site via a search engine. However, these users were far more likely to view a smaller number of pages in a session compared to other users. About three-quarters viewed just one to three pages and then left compared to 57% of those coming in via other links and 29% of those coming in via other ISP links.

B. 8.2 By advert links, health warnings and hotspot

Online links, health warnings and hotspots were used to find sites, and this method was particularly popular with tabloid readers. There was some evidence that those people coming in via an advertisement hotspot bailed out of the session without viewing any pages. This may have occurred due to the length of time linking the user to the destination site or as a result of a mistaken click. The intervention of a metric recording organisation link (Adclick) which records use of clickable hotspot adverts lengthens the connection time.

B. 8.2.1 SurgeryDoor

- *Links were an important retrieval tool*. Just over three-quarters (78%) of people said that they had found health sites often (31%) or sometimes (47%) by clicking on a health link. While just 30% said that they had often (7%) or sometimes (23%) found a site by clicking on a health banner advertisement.
- *Health-warnings*. Surprisingly, health-warning links were found to be less helpful than online information put out by drug companies. Ten per cent of respondents found health-warning links very helpful and 38% found them helpful compared to 15% and 40% for online Drug company information. Sun readers were more likely to say that clickable health-warnings were fairly or very helpful: 70% said this compared to 20% of Guardian readers.
- *Drug company information*. Sun readers were likely to say Drug company product information was fairly or very helpful 64% compared to 35% of Guardian readers.
- *Banner advertisements*. Women were more likely to have clicked on a health banner advertisement to find health information: 31% had either sometimes or often compared to 21% of men. Sun readers were more

likely to use a clickable health banner advertisement: 53% had done so either sometimes or often compared to only 8% of Guardian readers. Sun readers were more likely to say that these links were helpful: 44% of this group said the information was fairly or very helpful compared to only 15% of Guardian readers.

B. 8.2.2 Medicdirect

- Hotspots. Most users, well over one third (38%), came to the site via an external (hotspot) link, 24% via a search engine, a third (33%) via an ungrouped link and 6% via an other ISP link. It is estimated that 94% of those coming in via an external (hotspot) link had an empty session - one where no information is found - compared to about 2% for other referrer groupings.

B. 9 Health topics sought

Why users went online and what they viewed varied considerably. As might have been expected, however, most users were online seeking information on a specific condition or illness, though this varied from site to site.. Usage of health topic(s) was partly dependent on menu prominence and menu structure.

B. 9.1 General

- *Illness & health condition searches most important*. Almost all of the UK respondents (97%) who had accessed the Internet for health information had done so to look up information about a particular illness and condition.
- *Doctors visits*. Fifty seven per cent had gathered information regarding a visit to the doctor.
- *Nutrition and exercise important*. Fifty two per cent had used a health Internet session to look for information or advice about nutrition, exercise, or weight control.
- *Alternative medicines*. Just under half of UK respondents had looked for information about alternative medicines.
- *Sensitive health topics*. Forty four per cent had looked for information about a sensitive health topic that was difficult to talk about.
- *Anxiety*. Forty per cent looked for information about a mental health issue, like depression or anxiety.
- *New treatments*. Thirty four per cent had looked for information about innovative or experimental treatments.
- *Self-diagnoses*. Twenty three per cent of respondents sought to diagnose or treat a medical condition on their own, using information from the Internet.

B. 9.2 SurgeryDoor

- *Looking for something specific*. Most people (66%) came to the site looking for specific information and about a quarter (23%) were looking for general health news. However, a significant percentage (45%) of respondents said that their first reason for visiting was to keep fit and healthy, 20% arrived out of general interest, 15% because they were currently suffering, 10% with regard to a long standing illness, 4% as they were carers and 6% came for some other reason.
- *General health information pages were popular*. Views to menu pages accounted for about 45% of use, Child Health, Health Lifestyle and Exercise, Pharmacy, Health News and Sexual Health were popular topics and appeared in the top ten topics viewed for each month.

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B. 9.3 NHS Direct Online

- The site was found by respondents to cover the following topics well: on a particular illness or condition, information about doctors and hospitals, information on sensitive health topics and information about doctor appointments. However, there was suggestive evidence that the site might under perform with respect to mental health, alternative medicine, new treatments and prescription drugs. The most popular health section appeared to be the Conditions and Treatment section followed by About NHS Direct Online and then NHS A–Z.

B. 9.4 Medicdirect

- *Concentration of use*. The top 15 health sections accounted for about 91% of all views. The most popular section was diseases (22%), followed by clinics (18%) and the homepage (8%).
- *Digital visibility experiments*. The menu prominence of two pages - the cancer menu page and the Cardiopulmonary Resuscitation (CPR) information page - was increased over a three month period. In both cases, once the underlining trend was taken into consideration, there was still sufficient evidence to say that there was an impact on page use as a result of making the menu items more prominent. In percentage terms the increase in use was estimated to be up to 41%.

B. 10 Trust & Authority

The huge variety of accredited and non-accredited sites, covering a wide spectrum of traditional, non-traditional and dubious health advice, meant that users did not always trust the information found. Online searchers employ a variety of online cues to check information authenticity, the most used appears to be to contrast and compare information from a variety of sites, however this requires both a degree of sophistication in navigating between sites and an ability to critically review information.

B. 10.1 General

- *Authority counts*. The main reason people gave for questioning the information reliability of a site was that that the source was felt to be unqualified (88%). Other reasons in order of importance: information had contradicted other information found on the web (87%) and that the site had not referenced its sources (81%). Although only 49% of respondents said that they had checked the source, older respondents and respondents viewing more health sites were more likely to do this. Interview and open questionnaire respondents also spoke of the need to evaluate authority.
- *Commercial sites attracted suspicion*. Most respondents, 63%, said that being too commercial would be a reason not to visit a site. Other major reasons included not quoting the source of data (60%) and if the information was not dated (49%). Just 53% of respondents said that they had not returned to a site because it was too commercial. Respondents in Greater London were more likely to say this: 70% said this compared to about 53% living outside Greater London. The Guardian and Times readers were also more likely to yes, 75% and 71% of these readers said they would not return to a site because it was too commercial compared to 49% of Daily Mail readers. Those earning more than £45,000 were also more likely to say so, 64% said this. Again, interviewees also registered a certain distaste for the mixing of health and commercialism

B. 10.2 SurgeryDoor

- *Cross-checking, journalism style*. A third of users said that they visited more than one site because they did not trust the information from a single source.
- *A bouncing form of information seeking has its benefits*. Approaching half (45%) of users said that they had actually found misleading information. Respondents who visited five or more web sites were about five or four times more likely to find information they thought was misleading compared to respondents who just visited one site.
- *Trust in other people's judgements*. Those respondents who were recommended the website were least likely to say that site trustworthiness was poor or just OK. This argues for health professionals to become more involved in patients' digital health information needs.
- *Trust and satisfaction go hand-in-hand*. The more a person benefited from the information the more likely they were to trust the site.
- *Some users more suspicious or investigative than others*. Those seeking alternative medicine were about one and three-quarter times more likely to find conflicting online advice.
- *Commercialism and untrustworthiness*. Web users finding the number of adverts as either poor or OK, in terms of obtrusiveness, were more likely to report that the site’s trustworthiness was also poor or only OK.
- *Those searching for prescription drugs were twice as likely to disregard information from a drug company site*. Older users too were about five times more likely disregard drug company sites compared to those aged under 25.

B. 10.3 NHS Direct Online

- The NHS site was regarded as trustworthy even among users of other sources, according to those who completed an online open questionnaire. One respondent wrote: 'I would only rely on information from an accountable and authoritative sources such as the NHS, company websites, professional or academic institutions'. In total, 36% of replies to this question indicated a preference for accessing information from 'official', 'reputable' or 'well known' sites - but no-one said they restricted their searching to NHS Direct Online. One person cautioned that, 'any information that you are unsure about should be checked with your GP/Dr and should not be the basis for important decisions.'

3C Digital Interactive Health Television (DiTV)

This conclusion largely concentrates on two televisions services, Living Health and NHS Direct Digital. Where appropriate comparisons are made to DKTV and Channel Health. Approximately 17,417 users and 760,219 page views were investigated. Seven questionnaires were completed covering 3,216 respondents, and 140 people participated in interviews, observations and focus groups.

C. 1 Key findings

DiTV viewers used the platform for health information and this use was associated with positive outcomes. The extent of use maybe limited by the services menu prominence, other limiting features are the inability to print out information, something overlooked by system designers.

C. 2 Health Outcomes

The use of health information on DiTV was associated with positive outcomes. Most users were helped in understanding more about their condition. Health information users on DiTV were about twice as likely to use information as a substitute for a visit to the doctor compared to users who had not used the service.

C. 2.1 Living Health

- *Information helped to understand*. Two-thirds (67%) of users said that the information they obtained had either helped or helped them a lot in understanding their condition. Twenty per cent of respondents said that they were helped a lot in terms of dealing with their doctor while 14% said that the service had helped a lot in improving their condition.
- *Information as a substitute*. Those using the service were about twice (1.8) as likely to say that they had used information found as a substitute for a visit to the doctor compared to users who had not used the service.

C. 2.2 NHS Direct Digital

- *Just over half (55%)* of viewers said that the information they obtained had helped them a lot in understanding their condition.
- *Dealing with the Doctor*. Twenty two per cent of respondents said that they were helped a lot in terms of dealing with their doctor, while 15% said that the service had helped a lot in improving their condition.
- *As a substitute for a Doctor's visit.* Those using the service were about one and half times (1.4) as likely to say that they had used information found

as a substitute for a visit to the doctor[9] compared to users who had not used the service.

C. 3 Use and users

Use of health DiTV services was good - just under a third of DiTV users came to use a DiTV information health service. Users were likely to look at a lot of pages in a session and this is thought to reflect the fact that users were using the service in a home environment and at a time that suited them - in other words, it was convenient, as interviewee subjects were quick to point out.

C. 3.1 Living Health

- *Popular given its novelty and the fact that it was a part of a multi-channel environment.* The service was made available to approximately 35,000 to 40,000 people. Over the six-month period monitored, 13,718 different people used the system. This gave a reach figure of about 30-34%.
- *Future use*. Over eight in ten (84%) of respondents said that they would be either fairly likely to or very likely to access the service if the service continued to be broadcast. However, this finding did not quite square with the (slowly) falling trend in use.
- *Repeat behaviour*. A relatively high percentage (41%) of users visited the service again during the pilot.
- *Deep penetration*. Thirty nine per cent of users viewed more than 20 pages during a visit, and these figures proved to be fairly stable over time.
- *Relatively low failure or interest rate*. Nineteen per cent of users viewed one to three pages and these users were unlikely to have penetrated past the menu screens and would not have viewed an information page.

C. 3.2 NHS Direct Digital

- *Reach*. This service was available to approximately 10,000 potential homes. Over the five-month period monitored, 1,965 different households used the system. Based upon this figure, it was estimated that about 20% of potential users (i.e. households) accessed the service during the pilot.
- *Returnees*. Thirty seven per cent of users revisited the service over the five month period
- *Deep penetration*. Forty four per cent of users viewed more than 20 pages, demonstrating, perhaps, a significant interest in what they saw.
- *Relatively low failure or interest rate*. Nineteen per cent of users viewed one to three pages and these users were unlikely to have penetrated past the menu screens.

C. 3.3 Channel Health

- *Reach – Channel Health*. Twenty-seven per cent of Channel Health viewers watched Bush Babies. This was quite impressive, given that the

[9] This was not significant at the 5% significance level.

target audience was pregnant women, not only a low percentage of the population as a whole, but presumably, a low proportion even of Channel Health viewers.

- *Reach - Sky*. Channel Health was estimated to have a monthly reach figure among Sky viewers of approximately 15%. Given a Sky audience base of around 5.7 million households then the audience of Bush Babies was estimated to be about 200,000 homes, or about 3.5-4% of all Sky subscribers (assuming they all received Channel Health).

C. 3.4 DKTV

- *Reach*. During the short (two months) survey period 142 users availed themselves of the service, out of the 403 households receiving it - a reach figure of 35%.

C. 4 Digital visibility

Generally, users navigated between channels and within services using on screen menus. Use of any particular television health channel will be affected by the service's prominence on the various on screen menus.

C. 4.1 NHS Direct Digital

- *Menu prominence an issue*. In reviewing the menu position of the service, it was found that as the service become more difficult to access as its sign posting became ever more removed from the television service's opening menu; what was happening was that the proportion of new visitors as a percentage of all users declined.
- *Impact on new users finding the service*. New users did not come through because of the increasing difficulty in finding the service. Those people who battled through to find the service, however, showed their tenacity by making more extensive use of the channel when they arrived. In sum, the number of clicks to get to service content is a critical feature with DiTV interactive services.

C. 5 Categorising users

DiTV appeared to offer users from lower socio-economic groupings a chance to access health information. There was also some evidence that men in the 20s - a DoH target group - might well view the service in the early morning.

C. 5.1 Living Health

- *Popular with lower-income groups*. Respondents living in an area with a low incidence of £20,000+ income earners were more likely to use the service. Users from such areas were about twice as likely to use the service, as were those in areas with a high incidence on earners at this level. In addition, users from lower income areas were more likely to say Living Health was useful compared to users from higher income areas.

C. 5.2 Channel Health

- *Users from middle and lower social classes* were two to three times more likely to have viewed the Bush Babies service as were respondents identified as being from a higher social class.

C. 6 Health topics sought

A variety of subjects were viewed, however, it became apparent that DiTV users were much more likely to view health topics of a personal and possibly embarrassing (i.e. sexual) nature.

C. 6.1 Living Health

- *The health sections that users were most interested* in were the 'Illness & Treatment' followed by ' Women's Health' and 'Men's Health'. The Illness and Treatment section accounted for 36% of all pages viewed. The most popular topics in the Illness and Treatment section were Back Pain, Depression, Impotence, Aids, and Irritable Bowel Syndrome.
- *Popular topics under* Women's Health were: Orgasm Problems, Dyspareunia and Thrush and Cystitis.

C. 6.2 NHS Direct Digital

- *The 'A-Z of Conditions' was the most popular section by some margin* and accounted for 57% of text pages viewed in the five month survey period.
- *The second most popular section viewed was 'Not Feeling Well'*, and accounted for 13% of pages viewed. There were indications here that users turned to these services to address real information/health needs rather than browse health pages (i.e. such as on healthy eating etc.) for recreation.
- *An established pattern* of popular topics viewed emerged in the 'A-Z Conditions' section with diabetes, lower back pain, asthma, mellitus appearing in the top ten of subjects viewed in each of these months.

C. 7 Transactional services

These services explored the potential of DiTV as a two-way medium where the user becomes an information sender as well as receiver, and a dialogue established. Such applications represent more advanced forms of interactivity and require a different mindset on the part of users who engage in a customised activity geared to addressing their specific problems rather than ones of a more general nature. The applications tested in the pilot study included visual interpersonal communication with an NHS nurse, online appointments booking with one's GP, and the maintenance of personal medical details online, in this instance personal immunisation records. In addition, one consortium tested a small-scale e-mail support service for a specific group - pregnant women.

C. 7.1 Living Health – InVision (Broadband nurse)

- *Disappointing take up of a very innovative service*. Despite the warmth, with which the service was received - by both consumers and nurses - relatively few people chose to use the service. One hundred and sixty three users from a potential audience of 38,000 in four months appears low. Four factors might explain this: (1) small potential user population (i.e. only those requiring a one-to-one consultation make up the potential user group); (2) discouragement by the service provider of casual users; (3) the lack of publicity; and (4) novelty and unfamiliarity of the service. Nonetheless, the number of people (1,380) who activated pages leading to the 'point of no return' connection button indicated much potential interest. Possibly a service ahead of its time.

C. 7.2 Living Health – GP Surgery Bookings Service

- *Disappointing take up*. Use of this facility was plainly very low with just 30 people making an online appointment with their doctor over a period of six months.
- *Limited service a problem.* This was partly to do with the fact that there were only three surgeries in the pilot, and one showed little interest in the experiment. The service was also difficult to use.
- *No great involvement shown by surgeries*. It was also partly to do with the fact that surgeries did not 'sell' the service sufficiently to their patients. Given the amount of work that was involved and that it would only be available for a period of six months, this was probably unrealistic. An open ended (time wise) roll-out might have produced different results.

C. 7.3 NHS Direct Digital - vaccination service

- *Poor take up*. Views to the vaccination service accounted for 0.14% of use; approximately 28 users had used the service. The service was a reminder service of when an injection was needed and users had to enter all relevant, personal details.

C. 8 Trust & Authority

Generally users trusted information on DiTV and were more likely to trust the information knowing that the NHS backed the service. The positioning of the NHS logo within the information services of one third party provider (Living Health) and delivered by another (Telewest) did not appear to dilute the perception of the NHS as a symbol of trust. This issue was explored with particular regard to the Living Health channel.

- *Trust*. Sixty per cent of users on Telewest's Birmingham cable platform said that they would trust the health information found on DiTV.
- *Role of NHS*. Forty-two per cent said they would not use the service should the NHS not be involved and a large majority (81%) thought the NHS should be involved with digital television.
- *Those who had less NHS contact trusted the NHS less*. There were digital users who did not buy into the NHS brand: DiTV users visiting the doctor less frequently and those less interested in health information were less

likely to accept the NHS as a symbol of trust, were less likely to recognise the NHS symbol, and were less likely to say that the NHS branded information could be trusted

- *Young users*. Younger cable respondents were less likely to recognise the NHS as a symbol of trust compared to older respondents.

C. 9 Non - use

DiTV users considered the web to be an important information source. There was some evidence, however, that for web users, DiTV seemed to be a poor information source.

C. 9.1 Living Health

- *Prefer the Doctor*. Nearly a quarter of non-user respondents said that they preferred their doctor to provide them with information,
- *Preferred printed sources*. Forty per cent of non-users said that they preferred printed information handed to them by their doctor.
- *Technology still a problem*. Seventeen per cent said that they were no good with technology (presumably then not exploiting their DiTVs' enhanced and interactive features). Older users were more likely to report that they did not use the service because they perceived themselves as not being good with technology. Approximately 30% of users over 55 reported technology as a barrier to use while about 12% or of users under 45 reported this as an issue. - a real difference.

3D Digital platform generalisations and comparisons

This section looks to build on the main findings for the three platforms, by highlighting common findings and significant differences.

D. 1 Overview

Both the Internet and DiTV performed well according to all the use metrics. However, suggestive evidence indicated that these platforms target different types of users. DiTV appeared more likely to attract users from lower socio-economic groupings and those who did not like addressing diverse and, possibly conflicting, information sources (choice in these circumstances not being welcomed). Internet users appeared to be slightly more educated, come from a higher income group and seem to prefer to hunt or flick from one site to another viewing an amount of contradictory information as a consequence (they appear to revel in the choice available). These are however tendencies, and both digital platforms were used by all income and socio-economic groups.

The take up of kiosks from the potential population has been comparatively poor: about 17% compared to about 30% for DiTV and the Internet. This is partly a result of poor prior experience with kiosks and ICT. In addition users shunned kiosks as they offered little in terms of privacy to the searcher ('search disclosure') compared to either DiTV or the Internet - something that has been shown to be very important.

D. 2 Health Outcomes

Positive outcomes were associated with all three platforms. However, users benefited less from kiosks. The health outcomes obtained by kiosks users were about half those obtained by DiTV and Internet users.

- *Kiosks performed half as well as the Internet or DiTV* when we compared people saying they were helped a lot from using a health information service in regard to a number of health activities and outcomes. In terms of understanding their conditions 74% of Internet users, visiting the SurgeryDoor site, said that they were helped a lot, 55% of DiTV viewers of the Living Health channel and about 29% of InTouch kiosk users felt similarly. Internet users also boasted the highest percentage saying that the information found helped them a lot in dealing with their doctor: 41% said that they were helped a lot compared to 20% of DiTV users and 6% of kiosk users. Interestingly, the Internet appeared to perform not so well in terms of helping people improve their physical condition a lot, only 11% said so compared to 8% of kiosk users and 14% of DiTV users.
- *DiTV performed best with regard to information being used as a substitute for a doctors visit.* In terms of employing information as an alternative to seeing the doctor. DiTV performed the best in that those using the DiTV

health information service were about twice (1.8 times) as likely to say that they had used information in this way compared to users who had not used the service. This was also true for Internet users of health sites but only for those 'very interested' in the Internet. There was no evidence that kiosk users employed the information found any differently from the general population. That is, the information will be used in this way but no differently compared to health information sources used by non-kiosk users.

D. 3 Use and Users

About a third of DiTV and Internet users who used these mutli-channel/site environments went on to use health information sources; whilst only about 17% of potential kiosk users did so. Compared to kiosk users DiTV and Internet users were more willing to interrogate the system deeply. Kiosks users conducted far shorter sessions than either Internet or DiTV health information users. In addition, a high percentage of kiosk users terminated their session without having viewed an information page; seemingly a case of failure at the terminal.

- *Reach*: Internet and DiTV performed well. Just about a third of Internet and DiTV users searched for health information. This was only true of about 15 to 17% of kiosk users.
- *Session time - kiosks performed poorly.* DiTV users recorded an average session time of about six minutes, Internet uses had a session length of about five minutes while Kiosk users trailed way behind with a session length of about a minute and half. The very short session duration of kiosk users partly results from users bailing out early in their session.
- *Kiosk users were more likely to terminate their session early compared to DiTV users.* This can only be compared between DiTV and kiosk users as Internet page penetration calculation is muddled by caching and search engine use. While 38% of kiosk users viewed just one to three pages this was only true of 19% of DiTV users. Many kiosk users appeared to terminate their session early without having reached a content page. This was not true of DiTV, in fact it was found that about 57% of DiTV health information users went on to view 11 or more pages and 39% went on to view over 20 pages. Only 19% of kiosk users viewed 11 or more pages and just 6% went on to view over 20 pages.

D. 4 Categorising users

- *Women v men*. For all platforms there was a tendency for women under the age of 55 to be major users. This changed after 55 when men took a more active role in searching for health information.
- *Young adults*. Evidence suggested that young adults of both sexes, but mainly women, were more willing to use information technology - particularly the Internet - to find health information, often searching for 'alternative' health topics. These users were, however, communicative and opinionated and that, therefore, directing health messages at them digitally may be appropriate, at least in terms of delivery channel. Men in their 20's

were found to be particularly backward in accessing health information, though suggestive evidence showed that this group were searching health DiTV content late at night and early in the morning.

- *Children*. People under 15 years old were big users of kiosks, although the nature of their use, and the extent to which they actively sought and acquired health information, is an area requiring further investigation (current research was inhibited by the limitations placed on the study by research ethics committees, although a substantial dataset was obtained through observation, and by proxy, with parents and health professionals having experience of young users). Unsurprisingly, the clear message emerged that electronic delivery may be most effective for this user group too.
- *Elderly*. Older people, those over 75, were - also unsurprisingly - less likely to take up online systems compared to other users. In part this was because they considered themselves not adept with technology and in part because they preferred their advice coming from medical professionals. There was evidence, however, that the over 65's, were four times more likely to e-mail their doctor compared to younger users. For this group, it may be advisable to continue to disseminate health information in hardcopy, although their willingness to use e-mail to contact their doctor does suggest a relationship with health professionals that could be developed. In addition the more familiar medium of television is probably preferred, although, of course, DiTV demands a certain sophistication in navigating a series of menus. It is important to note that for many elderly people, and also for others not familiar with the Internet, using Web-derived metaphors such as 'Home' may not be appropriate. Our DiTV work showed some confusion on the part of users as to the meaning of the word 'Home' in this context.

D. 4.1 Health and user inequalities

- *DiTV* tends to be used by lower socio-economic groupings. Lower income groups were twice as likely to use the health information service compared to higher income groups.
- *Internet*. There was suggestive evidence that the Internet was more likely, but not exclusively, to be used by educated and relatively well off groupings. The skills needed to manage and use health information on the Internet - i.e. to evaluate an array of sources, and to extract information from lengthy hitlists - suggests a more educated user.
- *Kiosk.* Skill shortages and limited on-location help prevented some users from participating in using kiosks for health information.

D. 5 Usability (and prior experience)

Prior experience with technology can have a profound effect on the willingness and ability of people to engage with online health information systems. For DiTV users this was not such a problem as they were already active users of the platform. For the Internet, users were also already active users though the complexity of managing information from a large number of sites meant that skills were more dispersed over the user population. For the

kiosk this was a problem as many potential kiosk users were put off using the technology or were curtailing their sessions early as they did not want to engage with, what to them was, an unfamiliar technology. However, little has been done at kiosk locations to overcome this problem.

- *Users' skills were important*. Users with previous experience of technology were more likely to engage with a kiosk system, this was even true of users with an experience of household technology items, such as microwave cookers. Kiosk users may be using an electronic information source for the first time, and not be experienced in negotiating menu hierarchies etc.
- *Kiosk menus maybe a problem*. Thirty per cent of kiosk users said that the menus were not really, or only sometimes, easy. This was true of only 16% of those using a DiTV health information service.
- *Kiosk users did not find the system easy to use.* Thirty three per cent of kiosk users found the system not easy to use compared to 23% of Internet users.
- *DiTV users found it easy to use the system*. Two-thirds of DiTV users said that they had just started using the service and had found it by flicking through channels using the remote control.

D. 6 Health topics sought

D. 6.1 Coverage comparisons

An online health information service is only as useful as its content. In a straight comparison between the platforms, kiosks had only about a third of the health content compared to either a DiTV (Living Health) service or an Internet service (SurgeryDoor). However, there was evidence that kiosk content would be better used if the menu structure was adapted to the information needs of the particular kiosk location.

- *Content is king*. In a survey of content used: kiosks (InTouch with Health) recorded 864 pages of used health content, Internet (SurgeryDoor) recorded 2,341 pages and DiTV (Living Health) recorded 2,648. This argues that DiTV was the most comprehensive and the most used.
- *Misleading content was an issue for Internet users.* Almost half of Internet users claimed to have found misleading information. In part this is related to the number of competing health sites available on the Internet. An advantage of a DiTV service for some is that the information represents, currently at least, a single source and hence it was seemingly more authoritative. However, even 40% of DiTV users thought that they would not necessarily trust health information on the platform, though the fact that information was branded NHS did meet some users' concerns.

D. 6.2 By location - 'search disclosure'

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- *Using with an audience is a problem*. Users were more willing to use a service for certain, perhaps, embarrassing content, the greater the privacy offered. This suggests that the best place for viewing much health

information is in the home, hence DiTV is regarded the best platform, followed closely by the Internet. In terms of 'search disclosure' kiosks were perhaps located in the poorest environment for health information seeking. People were put off using the system because of the public positioning of the kiosk .

- *Home use*. As one interviewee commented: 'I can sit at home, whenever I like, and surf around (the Internet)' while for privacy their related comment was: 'its one thing standing there in front of everyone at a doctor's surgery, and another sitting comfortably at home, in the privacy of your own house, looking up your condition with no-one peering over your shoulder'. Another respondent reported: 'In the morning everyone is out [at work and school] so I can look at anything I want to on the box. I don't really want my 11 year old asking me what 'period pains' are'.
- *Impacts on views to a sensitive topic*. HIV did not receive as many page views on kiosks as it did on the more private environment of DiTV. Thus the page on HIV received 0.0003% of all page views on a kiosk system compared to 0.1% on DiTV.
- *Privacy to view what you want* (Table 4). The willingness of DiTV users, in the privacy of their own homes, to view pages of a private and sexual nature can be seen in the table below. Even web topics were more sensitive or personal than touchscreen kiosk topics.

Table 4: Health topics viewed by platform in rank order

Health topics viewed by platform in rank order		
Top 15 pages viewed on Living Health (DiTV)	**Top 15 pages viewed on the NHS Direct Online website**	**Top 15 pages viewed on InTouch with Health kiosks**
Orgasm problems	Anthrax	Good eating
Impotence	Depression	Alcohol
Premature ejaculation	Haemorrhoids	Exercise
Keep your sex life in good shape	Thrush	Weight
No Content	Hypertension	Cancer prevention
NHS Direct in Vision	Back pain	Smoking
Dyspareunia	Joint pain	Back pain - strain
Sexual Infections	Urinary tract infection	Brazil
Gay Sex	Chlamydia infection	Stress
Sexual Health Help	Influenza	Asthma in childhood
Thrush and cystitis	Accidents	Enuresis
Preventing prostate cancer	Body mass	China
Flatulence	Dizziness	Chickenpox
Practising safer sex	Diabetes	Abnormal heart rhythms - arterial
Injury treatment principles	Pregnancy and childbirth	Abnormal heart rhythms - ventricular

D. 7 Trust and authority

All platforms enjoyed a degree of trust and mistrust. What is apparent is the way that users handle their mistrust on each platform. This was most apparent when comparing the Internet and DiTV. For DiTV users there was only one service and users looked for labels, such as the NHS label, to accredit the information found. This was not so true for the Internet. Users managed their trust of any particular site by viewing and comparing information from a number of sites. For kiosk users trust appeared to be more related to the location of the kiosk. One reason why a Safeway kiosk might have double the blank sessions (those where only three pages or fewer were viewed) compared to health information centres is that users were more likely to trust

the content in a Health Information centre and hence exerted that much more effort in penetrating the menu pages.

- *DiTV*. A substantial proportion of respondents (43%) said they would not use the service should the NHS not be involved.
- *Internet*. Ninety two percent of users of a health Internet site who visited more than one site said that they did this to compare information.
- *Kiosks*. The host organisation was generally vested with some degree of responsibility necessary to only permit quality information to be disseminated on their premises 'Well, they wouldn't let any cowboy stick a kiosk here, would they?' … 'It would look bad on them [the pharmacy] if the information wasn't kosher'.

D. 8 Professional Dependency

Research across all platforms identified groups of users who were wholly dependent on the information provided by health professionals. In part these users just did not want to bother with any form of health information. In part they did not want to engage with technology at any level. In part they sought prescribed health information sources. And in part they were fatalistic about health in general. These respondents just wanted to get by and saw health as an issue to be dealt with by their doctor. They did not see any real link between health information and their health.

- *DiTV*. Twenty nine per cent of all DiTV (NHS Direct Digital) respondents said that their doctor told them all they needed to know so they did not bother with health information. Those aged over 55 were more likely to agree; about 39% of this age group expressed this view compared to 20% of those aged under 55.
- Research (DiTV – Living Health) identified a passive traditional information user. This user was economically disadvantaged, unaware of other information sources but has an identified need for health information. They were currently more likely to visit the surgery for health information and relied upon a medical professional to give them advice.
- *Kiosks*. About 75% of non-users of a surgery based kiosk said that their doctor or nurse told them all they needed to know so that they had no need for help from the kiosk.
- Fatalism and defiance were also factors, albeit only exhibited by a minority of interviewees, in leading to a poor appetite for health information.

3E Barriers and inequalities inhibiting the use of digital health information services, and recommendations for overcoming them

Two of the most important aims of the study were to examine: (1) what barriers to the general public there were inhibiting the use of electronic health information systems, and ways these may be overcome; (2) the health inequalities that might arise as a result of widespread digital information provision. In the case of barriers, this was especially important as the target audience - the nation - would inevitably include many groups and communities who have little or no familiarity with digital information services of any kind, never mind employing them to directly help with their health, and there are plainly big dangers in second guessing their difficulties. In the case of inequalities there was a danger that in the attempt to minimise inequalities through the widespread provision of health information, the very opposite would occur with the information rich becoming even richer. We have touched on these matters throughout the conclusions and, even accepting the risk of repeating ourselves, it is useful to draw these data together in order to get a more coherent picture of the barriers people confronted and the inequalities that might exist.

E. 1 Barriers

Firstly, there were the information seeking barriers created by the digital platforms themselves, and in this respect we have identified the problems caused by 'search disclosure' and digital visibility. Secondly, there were the more human barriers, which included cultural factors, confidence or proficiency with ICT, mis-conceptions about the services and systems, and lack of engagement by health professionals

E. 1.1 'Search disclosure'

'Search disclosure' describes what appears to be a major barrier to using health information systems in public places, and especially where the potential user might come into contact with people they know. Our investigations have shown that different patterns of use were exhibited depending on both location types (medical/non-medical; public/private), and that kiosks performed poorly in doctors' surgeries. This points to a reluctance to use such a system in the glare of other patients -often a substantial number - in a waiting room or, indeed, even in the less confined space of a supermarket or pharmacy. 'search disclosure' suggests that instead of simply replicating the same content and uploading it onto each platform (in other words just broadcasting it), it may be advisable to tailor content to specific circumstances. Having, perhaps, less - but more focused - information on the system may make it more navigable, and avoid the problem of users inadvertently accessing a page about, for example, sexual disease, whilst in a supermarket where passers-by may be able to see them. Kiosks in public places could either

restrict themselves to more general health information or, at least, have information about sensitive topics more deeply buried in the menu hierarchy - although this may lead to the problems of digital visibility mentioned below.

The phenomenon of 'search disclosure' strongly suggests that health information may be more effectively delivered via a system available in one's own home - DiTV or the Internet, for example. It could be argued that, therefore, material one might prefer not to access in a public place could be deposited on this medium. However further research is needed to investigate the problems related of children's access. of this material.

E. 1.2 Digital visibility

Digital visibility - the positioning of digital information so it can be easily and quickly spotted - has been shown to be a significant factor in accessing particular health pages and services. When the link to a health information service on a DiTV system was moved further down the hierarchy - in other words, when more links had to be activated in order to access it - use dropped significantly. Also, more than one third of kiosk users appeared to have failed to arrive at an information page, because of the (numerous) levels it is necessary to negotiate. The use of several hierarchical levels, then, represents a barrier to information access it may be difficult to overcome where digital services are very comprehensive or encyclopaedic in nature. People will, of course, use what information they can see, rather than what they need, and this has enormous implications for health professionals, as well as for the users themselves.

Following on from this, the Government seems to be right to consider kiosk locations such as supermarkets and libraries, where members of the public can access health information both anonymously and without the need to seek a medical appointment. This raises the issue, of course, of the purpose of kiosks, and whether the menu structure should be tailored differently to the various locations. In a medical setting they might be regarded as an adjunct to a consultation with the doctor, in which case they might be utilised by staff in tandem with patients and with a menu structure to reflect this. In non-medical locations, the role would be more that of an alternative to or substitute for an appointment - again pointing to a possible variation in content and again the menu structure should offer easy access to such information.

There are, of course, pedagogical barriers with regard to the provision of health information - be it in electronic or hardcopy form. Interviews with medical professionals indicated that they often make judgements about patients' competencies to understand and handle information. This leads to the professionals' differential actions with regard to information provision and recommendation. We have argued in this report that, as people have such varied information needs, and abilities to comprehend information, it may be advisable to provide 'vertical' layers of pages. These would offer information on each topic at different depths or levels of detail, in addition to the 'lateral' arrangement of material organised by topic. This same solution should apply also to people with different reading and reading comprehension levels.

Clearly, the designers of any system which did this would have to be cognisant of digital visibility issues, and consider how the information could be displayed in the fewest hierarchical levels, perhaps with the informational levels 'side-by-side' on the menu option e.g. 'treatment of kidney disease: basic information; more detailed information; advanced information' - where each option was an active link.

E. 1.3 Cultural barriers

Cultural barrier factors related to the use of electronic health systems also apply to information produced in any format. Principal amongst these factors is the view that the health professional is the keeper of information, and tells patients all they need to know. Significantly, patients who adopt this view - predominantly, but not exclusively, the elderly and lower socio-economically grouped women - appear to be happy to simply absorb information related to them by their GP or nurse. A second cultural factor also prevalent amongst elderly and lower socio-economic patients is a reluctance to personally seek information simply because it has not been a practice or habit, in any sphere. The trend towards digital; information-seeking, stimulated by the explosion in amount of information available, has not affected everyone, and a major task facing health professionals is how to engage patients in this respect.

E. 1.4 Low confidence and proficiency with ICT

Confidence with, and a (perceived) lack of competence, in using information technology presented a greater barrier for kiosk users and to a certain extent Internet users. Only DiTV users were found to engage with the system with little or no problems. This problem may, in part in the case of kiosks, be addressed by the active engagement of health professionals in showing patients the system and helping them understand how to use it. However, it has to be said such help was generally missing from the environments investigated. The problem also shows, once again, the importance of channelling information to people's own homes, on a DiTV environment. Users appear to have generally a better confidence level engaging with this platform as a result of previous experiment with and learned skills in navigating and retrieving information.

E. 1.5 Public's misconceptions about nature of digital services

Another barrier, related to the lack of engagement by health professionals, is that of misconceptions about the nature of the service. Findings showed that many people in the environment where a touchscreen kiosk was located either simply did not notice it; thought it was for a professional user group, or had other misconceptions. Essential, therefore, is the need - wherever the location - to advertise the presence, purpose and availability of the kiosk. For Internet users misconceptions relate to the abundance of both information and the number of competing health sites. This results in a questioning of the information.

It is worth considering multi-function kiosks in that the health-related information may be used if this is bundled in with information of other kinds - general community information for example. For one thing there would be more reason to use the kiosk system, and for another, people would be exposed to the possibility of accessing health information whilst undertaking other information retrieval tasks, and might do so spontaneously. However this must be balanced against the inevitable addition of hierarchical levels and increased complexity of the menu structure. The role of such kiosk needs further investigation.

E. 1.6 Lack of interest/engagement by health staff

This report has shown a marked reluctance on the part of doctors to engage with their patients with regard to the use of electronic health information systems - most specifically the touchscreen kiosk, and thus are not undertaking the positive engagement this report has highlighted as being so necessary. Indeed, the report has shown that where doctors did engage, use of the system was higher. The instant seeking of professional help by the majority of patients interviewed for the study, and the continuing trust in their advice, appears to suggest that many would certainly use the information service if recommended by their GP. It would be even more effective for the doctor or nurse actually to use the kiosk with the patient although, of course, time constraints may preclude this. What may be possible instead would be for the doctor to be equipped with a CD-ROM version (available from InTouch with Health) of the kiosk in the surgery which could be used either at the end of a consultation or actually as part of it. Patients might then see the benefits of the information and be encouraged to undertake independent use.

The findings have clear implications for the training of health professionals. Firstly, although nurses appeared to be very involved with patients' information needs, GPs were less so. With the burgeoning availability of information, and with a general acceptance that information can improve health, as emphasised most notably in the recent report by Derek Wanless (Wanless 2002) it is essential that medical staff begin to really engage their patients, and include information as part of their consultations. Secondly, it appears inevitable that patients will shop around ever more for their information. We have described these information seekers as promiscuous users. It might be incumbent upon future health professionals to help patients understand how to evaluate different sources. Certainly, there seems to be already much more of a climate of negotiated care, and patients will be ever more informed by a wide variety of information sources.

E. 2 Inequalities

Here we examine the possible inequalities in access to and take up of health information from electronic sources. A number were identified, arising from: socio-economic factors, age, health/disabilities, education and ethnicity.

E. 2.1 Socio-economic inequalities

One positive message from the research was that one of the platforms researched, DiTV, appeared to be used by lower socio-economic groupings. For example, people from postcode areas with a low incidence of £20,000+ earners were about twice as likely to use the Living Health and NHS Direct Digital services, and those from middle and lower social classes were two to three times more likely to have viewed the programme Bush Babies on Channel Health. This does not hold for other platforms, however. There is suggestive evidence that the Internet is more likely to be used by educated and relatively well off groupings. In fact, the skills needed to manage and use health information on the Internet - evaluating information from a variety of disparate sources, navigating through a huge number of pages - suggest a more educated user. With regard to kiosk use where a neighbourhood housing a kiosk had a high incidence of mortgages, generally there were a lower number of kiosk users, these users might well have their own internet access. Those high income users that did use the service new how to use it as session time was longer in areas where average earnings were above £20,000, indicating a more profitable use (both results were confirmed by additional studies).

E. 2.2 Age

The picture is a lot clearer when examining age inequalities. Elderly people have been shown in this report to be low Internet and kiosk users. Even when availing themselves of the opportunity to use systems, their usage was restricted - they viewed fewer web sources of health information and opened fewer kiosk pages. The latter is of some cause for concern because many elderly people clearly did not reach an information page. Questionnaire returns suggested that elderly people did not consider themselves to be competent in using new technology, and this impacted on their use of both kiosks and DiTV. For example, older NHS Direct Digital users, particularly women aged over 55, said in questionnaire returns that they found the service difficult to use, however the percentages saying this were a lot smaller compared to those older users using the kiosk..

There were other factors exacerbating inequality in use by age. A reluctance to obtain and use information from any sort was found, both from interviews with elderly people and from health professionals who dealt with them. This appears to be partly because they were not used to living in an ‘information age’, in which it was common for younger people to seek out their own information. This was partly due to deference to their GPs, and partly due to a kind of fatalism with regard to the technology.

Finally, with regard to the elderly, there was some evidence that ‘search disclosure’ factors came into play to a greater extent than with younger people. Older respondents were more likely to say that they did not like using the kiosk in public place: 56% of over 55 year olds in a questionnaire agreed this was a factor in their non-use, as compared to 32% of those non-users aged 35 and under. However the over 55’s might well have more serious health conditions.

E. 2.3 Health/disabilities

There was suggestive evidence that one's health status created inequalities, with concerns expressed by health professionals that kiosks built for 'standing' use did not serve people who may be too frail to stand for the period of time necessary to profitably use the kiosk (as might well occur in medical locations). Wheelchair-bound patients would also be debarred, and there is no provision currently for those with visual impairments (i.e. audio-pages or screen readers). Web-enabled kiosks, perhaps, discriminate even more against this group, as the web sites to which they give access cannot be reconfigured, as they can on one's own terminal, for large font size. The main contents list on InTouch with Health's own website (SurgeryDoor), shown to be too small for some users in a usability study, appears even smaller on the web-kiosk. The kiosk is not usable by people with other physical disabilities either. Unlike computer 'mice', which can be adapted for disabled use, the touchscreen mechanism does not appear to lend itself readily to suitable modification for disabled people.

E. 2.4 Education

Health professionals interviewed, particularly nurses, were concerned that many patients were unable to read information relating to their condition. At one fieldwork site nurses who made a point of referring patients to the kiosk declined to do so in cases where they felt that the information would be too difficult to understand. They included native English speakers in this health information 'rationing'.

Also related to education is ICT competence. A, perhaps surprising, degree of antipathy towards computers was shown in questionnaire results, and not only by elderly respondents. Forty two per cent of kiosk respondents said that they actually avoided computers. Those who used and felt comfortable with ICT were more likely to have used a kiosk: 21 % of these computer literate users had done so compared to 6% of users who avoided computers.

There was suggestive evidence that successful use of the Internet for health information required an approximate graduate level of education. The skills needed to manage and use health information on the Internet include the evaluation of an array of sources, and to extract information from lengthy hitlists. Users need to navigate within sites, navigate between sites using a search engine and to critically contrast and compare information.

E. 2.5 Ethnicity

The study at a kiosk site with a high ethnic patient group elicited some differences between UK and non-UK born users. Only 12% of the former, between 16 to 35 years of age, reported the system not easy to use, whereas 44% of non-UK born users did so. Focus group interviews with regard to a DiTV video-on-demand service revealed a reluctance of ethnic males to seek health information, for fear of appearing vulnerable.

3F Recommendations

F. 1 Major finding

This report has found that there is a good deal of evidence to support the belief that the best platform for delivering health information to the population at large is DiTV, as it appears to reach a broader audience and its use is less inhibited than other platforms. DiTV is followed by the Internet, excellent for the expert patient, and then - some way behind - kiosks, embellished with local content.

F. 2 Specific platform recommendations

F. 2.1 Kiosks

- Kiosks should be targeted at locations with low ratios of owner- occupiers in the population, and in areas poorly served by either the Internet or DiTV. Information centres, libraries and surgeries, within the designated information areas, are the preferred locations.
- Installed kiosks should be backed up with adequate marketing and integrated to local health routines and procedures. Without this kiosks in surgeries are very ineffective.
- The menu structure and content of the kiosks should be customised to reflect the specific information needs of users at kiosk locations. Kiosks, are unusual in that they can be firmly linked to a community and as a result customisation can proceed more effectively.
- Research to investigate multi subject kiosks (i.e. such as those containing community information) and the role and impact of kiosk menu structure.

F. 2.2 Internet

- Health professionals need to work in tandem with users with regard to the meeting of their information needs, and be aware of the information available on NHS Direct Online that can help particular patients. Perhaps one way to foster a patient and profession partnership in the digital environment would be a pilot scheme specifically targeting the development of an e-mail facility between professionals and those patients aged over 60.
- With patient self-help groups so successful and popular, NHS Direct Online should move to hosting links and references related to support groups.
- NHS Direct Online should approve and acknowledge the role played by other health information sites by listing these on the ‘home page’ of its site, as it does for individual topics. This is based on the argument that users - the end-user checkers - generally do this anyway so it is advisable to attempt to influence this form of information seeking behaviour for the better.

F. 2.3 DiTV

DiTV health services must learn the lessons taught to us by digital visibility, and should be piloted in their development by continuous deep log analysis to make sure the system is ever alert to the dynamic behaviour of the digital health consumer. In particular, care needs to be taken with regard to the positioning of services and nomenclature. Using terms derived from the Internet ('Home page' etc.) may not be appropriate in the short term, where a significant proportion of DiTV users may not have experience with the Internet.

F. 2.4 Between Platforms

A review of the use of video information on digital platforms is needed, especially as the new NHS Online Digital Television service has chosen not to host them.

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Appendix 1 - Project publications

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