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Range of self-tests available to buy in the United Kingdom: an Internet survey

A. Ryan[1], S. Wilson[1], S. Greenfield[1], S. Clifford[1], R. J. McManus[1], H. M. Pattison[2]

[1]Department of Primary Care and General Practice, The University of Birmingham, Edgbaston, Birmingham B15 2TT, UK
[2]School of Life and Health Sciences, Aston University, Aston Triangle, Birmingham B4 7ET, UK
Address correspondence to A. Ryan, E-mail: a.v.ryan@bham.ac.uk

ABSTRACT

We aimed to describe the availability in the United Kingdom of self-tests that are used to diagnose or screen for conditions without involving a health professional. A systematic Internet search identified 104 unique self-tests related to 24 named conditions including cancers, chronic conditions and infections. These self-tests require various samples including blood obtained using a lancet. The samples are processed at home with results available in minutes or sent to a laboratory for processing with results returned to the individual by e-mail or post. Prices per self-test and condition range from <£1 to £76. Self-tests are readily available, and further work is needed to assess their impact.

Keywords diagnosis; diagnostic tests, routine; self-care

Introduction

As technologies to design and manufacture diagnostic tests have developed, a range of self-tests to diagnose or screen for conditions have become available to the public to buy over the counter and via the Internet.[1] These self-tests do not require the user to communicate with a doctor before obtaining the test or when receiving the results: the results are available at home within minutes or a sample is sent to a laboratory and the results are returned directly to the user.

Self-tests have potential benefits, for example privacy or convenience, but also potential harms such as the distress caused by false-positive results.[2] Despite the potential impact of self-tests, a comprehensive literature review identified only one recent survey in the United Kingdom that asked participants about whether they had used home-testing kits, and this was part of a study on attitudes to genetic testing.[3] This lack of information, other than market research, led us to plan a study to describe the prevalence of the use of self-tests. To inform the design of this study, we undertook a systematic Internet search to identify self-tests that are available in the United Kingdom.

Methods

About 95% of searches in the United Kingdom are powered by four search engines: Google, Yahoo, MSN and Ask.[4] In April 2006, we used these search engines to search the web for (self test OR self diagnosis OR home test OR home diagnosis) and each term individually. The entire web was searched, rather than just UK sites, to ensure that tests that are sold from other countries to UK customers were also identified. Because ~70% of users move on if they have not found what they are looking for on the first two pages,[5] we reviewed descriptions of the first 20 sites returned from each search and any sponsored sites on those pages. Sites that were obviously not relevant and directories were excluded, and the remaining sites were explored in April and May 2006.

We collected details of tests that, based on the description given, met the inclusion criteria and did not meet the exclusion criteria. A test was included if it could be purchased and used by a member of the UK public without involving a doctor, nurse or other health professional; if it detected a disease or condition that may need treatment or a risk factor or marker for such diseases or conditions; and if it required the user to take a sample and process it at home or send it to a laboratory with results returned by post or e-mail. A test was excluded if it could not be purchased by a member of the UK

A. Ryan, Clinical Research Fellow
S. Wilson, Reader in Clinical Epidemiology
S. Greenfield, Senior Lecturer
S. Clifford, Project Officer
R. J. McManus, Clinical Senior Lecturer
H. M. Pattison, Senior Lecturer

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public, including if it was reported as being out of stock; if it was for pregnancy, other normal states or monitoring existing conditions; if it was only sold in large batches, unless it was specifically stated that the test was for home use; if purchase required approval from a health professional, a prescription or correctly answered screening questions; or if it required a separate meter or testing device.

Costs were collected including shipping and tax where this information was given. Some self-tests were sold in packs or were for more than one condition, and the cost per test and condition was calculated. Where prices were only given in dollars, they were converted to pounds using the exchange rate at the beginning of May 2006 (£1 = $1.82).

Results

We collected details of 167 self-tests, which were advertised by 19 retailers. Nine retailers were based in the United Kingdom, seven in the United States, one in the Netherlands, one in Taiwan and one did not state where they were based.

Some self-tests were sold by more than one retailer, and there were 104 unique tests. These tests relate to 24 named conditions (Table 1) including cancers (e.g. tests for faecal occult blood and prostate-specific antigen), chronic conditions (e.g. tests related to diabetes and cardiovascular disease), acute infections (e.g. tests for urinary and sexually transmitted infections) and serious chronic infections (e.g. tests for HIV infection). Self-tests related to male and female infertility and allergies were also available. Some self-tests were for more than one condition, for example, chlamydia and gonorrhoea.

The self-tests required various samples: blood, stool, saliva, semen, urine or vaginal discharge. Where a blood sample was required, this was a finger prick sample obtained using a lancet. The samples were processed at home with results available in minutes or sent to a laboratory for processing with results returned by e-mail or post after several days.

Prices per self-test and condition, including postage or shipping where this information was available, ranged from <£1 for various urine tests or a test for vaginal infection to £76 for a test for human papillomavirus. Over 80% (n = 86) of the 104 unique self-tests had a maximum price of <£30.

Discussion

Main findings of this study

This study demonstrates that a wide range of self-tests are available, many at a reasonable price.

What is already known on this topic

Although previous articles mention that self-tests are available,[1,6] we have not been able to identify any systematic study detailing their availability in the United Kingdom. A comprehensive literature review also identified only one recent survey in the United Kingdom that asked about the use of home-testing kits, and this was part of a study on attitudes to genetic testing.[3] In that survey, the respondents were asked whether they had bought a health-testing kit to carry out at home with pregnancy tests cited as an example. Thirty-two percent of the 2510 respondents said that they had done so, but the question did not specify whether the test was to monitor an existing condition or diagnose a new condition, and the response rate was only 44%.

What this study adds

This study demonstrates the potential for self-testing for a wide range of conditions by members of the UK public. People can find out about self-tests using the Internet, and purchase of such tests is fairly straightforward and does not require consultation with a health professional. Self-tests do have potential benefits, for example privacy and convenience, but they may also have potential harms, for example distress caused by false-positive results[2] or risks associated with false-negative results. Other potential problems include extra pressure on primary health care professionals and NHS laboratories because people seek an explanation of results or further investigation.[7] A recent British Medical Association report highlighted that ad hoc screening can put people at risk because of a lack of evidence underpinning tests and insufficient quality assurance and accompanying information.[8]

Limitations of this study

We wanted to identify tests that involve a change in behaviour from diagnosis in a professional setting to diagnosis in a lay setting, and inclusion and exclusion criteria were developed based on this. We included tests that required the user to take a sample because we felt that this has previously been viewed as the domain of the professional, whereas pregnancy tests were excluded because women have used them for some time and their use is probably now expected by doctors. Although this study sets a baseline and indicates availability within these stated criteria, the appropriate criteria may need refinement in the future as further tests are developed. Our criteria exclude self-initiated imaging or screening tests based on, for example, changes in mental state or perception, but an Early Alert Alzheimer's Home Screening Test has already been reported as being available in the United States based on scratch-and-sniff style scents.[9]

Table 1 Self-tests available to members of the UK public identified during an Internet search in April and May 2006

Condition described as being related to the self-test	*Sample required*	*Self-test described as detecting*	*Processed at*	*Cost per test and condition (£)*		*Number*	
				Minimum	*Maximum*	*All*	*Unique*
Allergy	Blood obtained with lancet	IgE	Home	10	12	13	6
	Blood obtained with lancet	IgE	Lab	15	31	6	3
Amniotic fluid leak	Obtained with panty liner	Amniotic fluid	Home	4	6	2	1
Anaemia	Blood obtained with lancet	Haemoglobin	Home	11	24	5	1
Bacterial vaginosis	Vaginal swab	pH/alkali amines	Home	5	9	1	1
Bowel disorders	Stool obtained with pad in toilet	Blood	Home	1	15	6	2
	Stool not otherwise specified	Blood	Home	6	6	1	1
	Stool obtained by wiping	Blood	Home	3	3	1	1
	Stool obtained with stick	Blood	Home	5	16	4	3
Cardiovascular disease	Blood obtained with lancet	Total, HDL, LDL cholesterol/triglycerides	Lab	17	26	1	1
	Blood obtained with lancet	Total, HDL cholesterol	Home	13	23	7	3
	Blood obtained with lancet	Total cholesterol	Home	3	15	16	9
	Blood obtained with lancet	Homocysteine	Lab	75	75	1	1
Chlamydia	Cervical swab	Chlamydia-specific enzyme	Home	15	18	4	1
	Cervical swab/urine	Chlamydia-specific enzyme/not specified	Home/lab	26	26	1	1
	Urine	Chlamydia	Lab	42	61	4	2
	Urine	Not specified	Lab	40	40	1	1
Chlamydia/gonorrhoea	Urine	Chlamydia/gonorrhoea	Lab	30	38	2	1
	Urine	Not specified	Lab	33	36	2	1
Chlamydia/group B strep	Urine/vaginal and anal swabs	Chlamydia/group B strep	Lab	29	29	1	1
Diabetes	Blood obtained with lancet	Glucose	Home	3	9	5	3
	Blood obtained with lancet	Ketones	Home	2	2	1	1
	Urine	Glucose	Home	<1	9	6	5
Glandular fever	Blood obtained with lancet	Antibodies	Home	8	8	1	1
Gonorrhoea	Urine	Gonorrhoea	Lab	42	61	4	2
HIV-infection	Blood obtained with lancet	Antibodies	Home	9	11	3	2
HPV	Obtained with tampon	HPV	Lab	76	76	1	1
HPV/chlamydia	Obtained with tampon	HPV/chlamydia	Lab	45	45	1	1
HPV/chlamydia/ gonorrhoea	Obtained with tampon	HPV/chlamydia/gonorrhoea	Lab	38	38	1	1
Influenza	Nasal discharge swab	Influenza virus	Home	14	21	1	1
Kidney/urinary tract disorders	Urine	Protein	Home	<1	<1	1	1
Kidney disorders	Urine	Albumin	Home	14	14	1	1
	Urine	Albumin	Lab	11	11	1	1
Menopause	Urine	FSH	Home	2	14	14	11
Not specified	Urine	Ketones	Home	<1	<1	1	1
	Urine or saliva	pH	Home	<1	<1	1	1
Osteoporosis	Urine	Marker	Lab	43	49	2	2
Prostate disorders	Blood obtained with lancet	PSA	Home	2	17	5	4
	Blood obtained with lancet	PSA	Lab	15	28	1	1
Reduced fertility	Semen	Sperm quality	Home	8	32	11	2
	Semen/urine	Sperm quality/FSH	Home	8	8	1	1
	Urine	FSH	Home	2	15	5	2
Stomach disorders	Blood obtained with lancet	Exposure to *Helicobacter pylori*	Home	10	14	2	1
Thrush	Not specified	Not specified	Home	12	13	1	1

Table 1 Continued

Condition described as being related to the self-test	*Sample required*	*Self-test described as detecting*	*Processed at*	*Cost per test and condition (£)*		*Number*	
				Minimum	*Maximum*	*All*	*Unique*
Urinary tract disorders	Urine	Blood	Home	<1	<1	1	1
UTI	Urine	Multiple parameters	Home	4	4	1	1
Vaginal infection	Obtained with panty liner	pH	Home	6	15	3	1
	Obtained with glove	pH	Home	<1	<1	1	1
Multiple disorders	Urine	Multiple parameters	Home	<1	6	11	11
					Total	167	104

FSH, follicle stimulating hormone; HDL, high-density lipoprotein; HPV, human papillomavirus; IgE, immunoglobulin E; LDL, low-density lipoprotein; PSA, prostate-specific antigen; UTI, urinary tract infection.

We attempted to verify that each self-test that we identified could be purchased by a member of the UK public, but it was not always possible to do so without actually purchasing the test. We may, therefore, have erroneously included a small number of tests where the retailer would only refuse to ship to the United Kingdom after credit card details were submitted. Even so, the identification of nine retailers in the United Kingdom is an indication of the general level of availability. Furthermore, this study was systematic rather than exhaustive, and there are likely to be other self-tests that were not identified during this study.

Retailers provided varying amounts of information on their websites. Even with our background knowledge, it was sometimes difficult to determine from the information provided exactly what the test detected, what doing the test involved and the sample that was required. Although we tried to determine the number of unique tests that were available by looking for duplicate tests, we were limited by the amount of descriptive information available from some retailers.

Conclusions

Self-tests are widely available. We are currently conducting a study to describe the prevalence of their use and factors associated with using them, but further work is needed to assess the impact of self-test use on individuals, the population and health services.

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Contributors

All authors were responsible for the overall design of this study. A.R., S.C., S.G. and S.W. designed the Internet search. S.C. conducted a preliminary Internet search, and A.R. conducted the full Internet search and collected details of eligible self-tests. A.R. collated the data and prepared the report with input from all authors.

Competing interest

None.

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