

Assessment Tools for Health Information websites: Using comparison of NHS Direct and MedlinePlus for health information about heart failure as an example.

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Abstract

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Health Information in western world is constantly increasing but there is a constant need for assessment of this information. Two tools developed to assess this information using heart failure as an example, and information assessed and compared for NHS Direct and MedlinePlus. Unfortunately, the state of health information in developing countries is poor and there is complete lack of information for common person especially in the local languages. There is lot to learn from the contents, presentation, and working of NHS Direct and MedlinePlus as an example.

Keywords: Assessment tools, health Information, NHS direct, Medline plus.

Introduction

There is a flood of health information in western world, which needs constant assessment. On the contrary, in developing countries health information websites are non-existent. Web search from developing countries for information about heart failure (HF) is futile, unfortunately, most of the information on third world websites are academic papers, advertisement for scientific meeting, conferences, or borrowed materials from western websites and media. There is no information for common person about HF and the material available are so varied and unorganised to be of use to layperson and mostly in foreign languages. [1,2,3,4] Where as websites from developed countries like NHS Direct [5] and MedlinePlus [6] from England and USA respectively are state of the art for patient and expert information with lot to learn from the contents, presentation, and working of these websites.

HF used as an example to assess the information on both the websites. HF is a common condition and affects one in 100 people in UK, increasing to 7% and 15% over the age of 75 and 85 years respectively. [7] With aging population and advancement in treatment of many cardiac diseases, patients with cardiac problems are surviving longer and presenting with complications like HF later in life. This accounts for the 5% of total hospital admissions in UK, with 30 - 50% readmission within 3 months. [8, 9] To treat this condition there is a big drive to manage patients with HF nearer to home and in community. This will shift the burden of care for the disease from hospitals to primary health workers in community and will need education of general population. [10, 11] Similar strategies for developing countries will have big impact on health care.

We have developed tools to assess health information websites, and compared both the sites for the information available about HF, critically analysed and made recommendations. This will also help as a guide for developing countries when developing health information websites.

Methods

Two tools, shown in appendix A&B, developed to assess both the websites.

Tool A was general and useful to assess any health information website, where as tool B only assessed the contents of a website concerning information about HF, though this may be modified, similar questionnaires, to assess any health condition. Guidance was taken from many websites to develop these tools including; Intute: health and science evaluation guidelines [12], Net scoring: criteria to assess the quality of health internet information [13], DISCERN [14] and HON code. [15]

Tool A checked the websites for credibility, contents, design layout, interactivity, links/additional information and accessibility. Credibility section further divided into source of information, disclosure, relevance, editorial process, language, and metadata. Content section assessed the coverage, accuracy, and currency of the information presented, where as the design layout, interactivity, links/addition information and accessibility sections dealt with the technical aspect and working of a website. In each section, specific questions were asked and answers were awarded marks, zero for no information to five for excellent information.

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Where the marking scheme was different, it clearly identified the sections with instructions for different marking scheme. Essential criteria marked with ** and a weighting of x2 awarded for providing essential information.

Tool B developed to assess the contents of websites for HF. Susanna E Bedell used similar tool for systematic critique of World Wide Web for information about diabetes mellitus. [16] Websites searched with terms like heart failure, chronic heart failure, left sided heart failure, cardiac failure, heart decompensation, congestive heart failure, ventricular dysfunction, and cardiomyopathy. [17]

As this was a comparative analysis of websites, no statistical analysis done and results tabulated and presented in descriptive format.

Results

The results are presented in a descriptive format and marks tabulated. Each site was marked using tool A for general assessment and Tool B to assess the contents (HF) of the website.

NHS Direct

NHS Direct is a website operated by NHS Direct and Department of Health, England. Using search term 'heart failure', 3950 results come up; In addition, NHS Direct has joined forces with NHS Choices, which gives general information about the condition of HF. The link with NHS Choices followed and assessed for general information about HF, both websites now work together, and relevant information is available on NHS Choices.

Using tool A the website scored 334 marks out of 400. Criteria about source of information, disclosure, relevance, editorial review processes, metadata and links/additional information secured full marks (5) - excellent. Similarly all essential criteria were either excellent (5) or very good (4).

Design layout and accessibility also secured 34 and 42 marks respectively. In language criteria, the language was simple and easy to understand, the webpage lays out the initial information in all the common languages spoken by ethnic minorities in UK, twelve in all, but the information was very basic about the NHS and websites. No translation was available about the specific conditions including HF in ethnic languages. The list of frequently asked questions (FAQ) though included, were very short and not subject specific. There was no technical help or training available for the user of website or to trouble shoot any problem encountered by the visitor. There was no interactive part of the website to consolidate or clarify the information, though facilities for feedback and suggestions about the website existed.

Tool B used to assess the contents of the website; it secured 86 marks out of 170. The website especially NHS Choices was easy to use and understand, with information presented in layperson's language. Most of the contents secured very good or excellent marks, but there were deficiencies in areas of interactivity, facilities like discussion board, online booking, and vital statistic of the condition. Where more depth or understanding of a particular aspect of HF was required, it was missing. The website kept referring back to the same initial pages when ever efforts was made to dig out detailed information about a certain aspect of HF, for example when rehabilitation and post operative care after surgery for HF was requested, web page referred to the initial pages every time. The information was multilayered, yet it lacked the depth of certain aspects of the subject. Information was current, mentioned latest update date, and next update planned, but what content was updated in the last review was not clear. On some pages, these dates were left blank (see Fig 1). The information was backed up with scientific references of establish reputation and good standing. The use of certain facilities like 'choose and book facilities' required registration with the website and difficult to judge.

Figure 1
Blank dates for update and renewal (NHS Direct)



MedlinePlus

MedlinePlus is a health information website by US National Library of Medicine and National Institute of Health. Using the search term of 'heart failure', the website came up with 1650 results, but more importantly the HF definition came up on the top of the page with the possibility of 'read more' which linked to a very well organised, informative and well presented webpage. The page had all the topics listed alphabetically at the top of the page. Information about the HF was complete and excellently presented, using easily readable material along with aids like videos, audios, animation, expert interviews and interactive sessions with questions & answers, quiz to keep the user engaged and to highlight the important points. The website scored 141 marks out of 170 for the assessment of contents of website. The highlights of the website were the high quality of contents, video tutorial, interactive sessions, search cloud, complete information in Spanish language, and information about the site in sign language and 40 other languages.

On general assessment, the website scored 375 marks out of 400. Every criterion scored excellent or very good on general assessment. The webpage covered all aspects of HF; few deficiencies were lack of discussion board to involve the user in the process of learning, no explicit disclosure of financial resources, bias and editorial process for the HF information, though the links and sources demonstrated this information. Every information page identified the date of last update but date for next update not mentioned and few of the graphic took a long time to download. There was a process of finding and comparing different health facilities including hospitals, it was hard to judge how effective, or useful this process was on ground?

The comparative marks secured by both websites presented in Table 1 & 2 for general assessment and assessment of contents respectively.

Table 1

Assessment of website for Health Information using Tool A, for NHS Direct and MedlinePlus

CRITERIA			NHS Direct	MedlinePlus	NHS Direct	MedlinePlus
Credibility						
Source	** Is there any information about source of information?		5	5	70	70
	Is the information about the provenance of the source is available?		5	5	/	/
	**Are name, logo, and reference on each document of the site?		5	5	70	70
	**Is name and title of author or web master on each document of the site?		5	5		
	The author or webmaster has sufficient expertise and authority over the subject.		5	5		
	Is the resource well known and heavily used? (consider visitor statistics, awards, acknowledgement and general standing of the resource in health community)		5	5		
	Has a group or organisation taken the responsibility of the source and information?		5	5		
	Are they qualified to provide this information?		5	5		
	Is there ownership of copyrights and clear statement about it?		5	5		
	**Are contact details available? (Example, email address)		5	5		
Disclosure	**Source of finance disclosed.		5	4	20 / 20	17 / 20
	Is there any conflict of interest and disclosed?		5	5		
	Any bias or influence acknowledged and disclosed?		5	4		
Relevance	**Is the intended coverage and scope of the website relevant to the intended audience?		5	5	10 / 10	10 / 10

	Editorial review processes	**Is there an editorial process and it is robust?	5	4	20 / 20	18 / 20
		Is there an editor or webmaster with responsibility of information on the website?	5	5		
		Is there a process of scientific peer review?	5	5		
	Language	The resource is in English and language easy to understand.	5	5	11 / 15	14 / 15
		Is the readability of the source suitable for the audience?	5	5		
		Translations in other languages are available. (especially consider the ethnicity of the local population)	1	4		
	Metadata	**Is there information about information?	5	5	10	10
Contents						
	Coverage	Are the intended audience mentioned?	5	5	24 / 30	30 / 30
		Is the intended coverage and purpose of website explained and overview of the topic is present?	5	5		
		**Is the coverage comprehensive within the area and without major omissions?	4	5		
		Does it cover full range of the related topics/ subjects?	3	5		
		What is the retrospective coverage of the resource?	3	5		
	Accuracy	**Is the information accurate?	5	5	38 / 40	39 / 40
		Has the information been through editing or refereeing process?	5	5		
		Is the information research based?	5	5		
		Is there information produced and disseminated by the source with a bias to produce or disseminate the information? (Note : (5) mark for no bias and then according to the level of bias)	5	5		
		Is there any mechanism for the user to flag inaccurate information?	5	4		
		Absence of grammatical and typographical errors?	5	5		
		Is the view balanced and mention more than one opinion and not a single persons or organisation's opinion.	3	5		
	Currency	**Is the information up to date? (Note: Different type of information will need different schedule for updating)	4	5	25 / 30	25 / 30
		The date of latest update is mentioned.	5	5		
		Does it clearly identify what information was up dated and review of the other information?	5	5		
		Is there what's new page?	3	5		
		Does it give date of next up date?	4	0		

Design and layout	**Is the resource well designed?	4	5	34 / 45	45 / 45
	Is the information professionally presented?	5	5		
	Is the design consistent in all parts of the same resource?	5	5		
	Are there aids to find information and they are useful? (Example: site map, index, menu systems, and search facilities)	5	5		
	Is the navigation between links and page easy?	5	5		
	Is the image use appropriate? (Should not be only for decorative purpose)	1	5		
	Are the advertisements appropriate and clearly distinguished from editorial content? (Should not be distracting from the information and too dominating as the main purpose of the website)	5	5		
	Are there any special and unique features to design?	0	5		
Interactivity	Is there any part of website interactive? (consider quiz, CPD points for health professionals, live web pages with feed back)	0	4	05 / 25	13 / 25
	Is there an online discussion board?	0	0		
	Is the discussion board monitored by professional moderator?	0	0		
	Is there online tutorial or why of education?	0	4		
	Are there arrangements for confidentiality of data/ information provided by the user?	5	5		
Links /additional information	**Are there any links available for additional information and working?	5	5	20 / 20	20 / 20
	Do they add value to the site?	5	5		
	Is there a search facility for other sources?	5	5		
Accessibility	**Is the resource available consistently?	5	5	42 / 45	44 / 45
	What is the speed of resource and does it vary?	5	5		
	Are there any special software/ hardware requirement to view all the features? (Note: Mark (5) if no requirement and then (1) for hardware requirement, (2) for special software requirements which the user has to buy, (3) if software is freely available from any website, (4) if provided by the site for free down load)	5	5		
	Are graphics simple and easy to down load? (Example; too large graphics may inhibit the access to website.)	5	4		
	Is there any registration process and is it strait forward? (Note: Mark (5) if no registration required and then according to ease of registration process)	4	5		










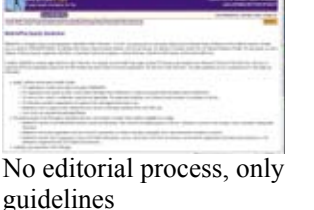

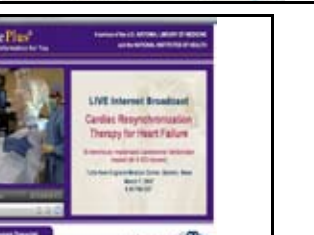
		Charges for access are reasonable as compare to other website. Note: please mark (5) if no charges and (1) for very high, (2) for high, (3) for equal or comparable charges and (4) for charges lower than other websites.	5	5		
		Is the information in public domain? (consider copyrights restriction)	5	5		
		Geographically access for all (consider world wide)	3	5		
FAQ		Does it have a list of frequently asked questions?	4	5	4 / 5	5 / 5
Help		The help information about the website is available and useful.	0	5	1 / 15	15 / 15
		User support facilities are available and useful. (consider training material, courses, user support groups or online support system)	1	5		
		Telephone contact, email and contact address for technical support is available.	0	5		
Total Marks (400)					334	375















Table 2


Assessment of contents (Heart Failure) using Tool B - NHS Direct and MedlinePlus.

Content Coverage	NHS Direct	Med line Plus
Definition of heart failure	4	4
Symptoms and signs of heart failure	4	5
Mechanisms of heart failure	1	5
Causes of heart failure	4	5
Diagnosis of heart failure	5	5
Vital statistic for heart failure	1	5
Different option for treatment for heart failure	5	5
Criteria for use of different treatment options for heart failure	5	5
Complications associated with different treatment options for heart failure	4	5
Criteria for admission in hospital for patients with heart failure	0	5
Community based treatment for heart failure	0	3
Advice on daily monitoring at home like weight and other criteria	0	5
Advice on equipment used at home like home oxygen etc	2	5
Emergency contact for doctors, hospitals & ambulance services	4	3
Indications of surgery for heart failure	1	5
Complication and vital statistics for surgery of heart failure	0	5
Help with post operative recovery and rehabilitation after heart failure surgery	0	5
Criteria for heart transplant	1	5
Advise on heart transplant and after care	1	5
Good and scientific data /evidence to support all the information	4	5
Adequate information for all major ethnic groups in their language	4	4
Contents in ethnic language are as good as in English language	2	5
Facility to arrange appointment with health professional through the website	3	0
Help with exercise and keep fit for patient with heart failure	5	5
Dietary advice for patients with heart failure	5	5
Emotional and psychological support for patients with heart failure	4	5
Discussion board for patients	3	0
Professional moderator available and clearly mention his/her qualifications	0	0
Moderation is frequent enough to be helpful	0	0
On line classes or interactive service for the patients education and learning	0	4
'What is new' and up to date information page	3	5
Heart failure resource	4	5
Alternative therapies with discussion of pro and cons	3	3
Addition or unique features	5	5
Total marks (170)	86	141

Table 3
Examples of similarities and differences in both websites

SIMILARITIES	NHS Direct	MedlinePlus
Front Page		
Heart Failure Page		
Site map		
Links		
DIFFERENCES		
Editorial process		 No editorial process, only guidelines
Animation	No animation except one on coronary bypass surgery	
Videos	No videos on heart failure	

Pictures / Images	 Big irrelevant pictures	
Languages	 Only information about NHS, not heart failure	 Complete translation of content in Spanish
Help page	 Help or training page need log in and registration!	 Quick and direct
Interactivity	 Blog , no real time interactive page	 Interactive learning
Update dates	 Both last and next review dates	 Only last review date
What is new?	No relevant section on heart failure	
FAQ	Hard to find!	
Contact details	 Many layers	 Simple procedure

Sign Language	No sign language	 <p>Heart failure learning by ASL</p>
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Discussion

More than two and a half centuries ago, Samuel Johnson described, "The knowledge is of two kinds. We know a subject ourselves, or we know where we can find information on it." [18] In this information age of internet and World Wide Web, this is more relevant and true than ever. It is very important not only to find the relevant information but also to make sure that it is credible, accurate, current and from an authentic source. With new website, cropping up every minute this is very important to have ways and means to assess the information available on the internet.

Two of the well-known and commonly used websites about health information are assessed. As mentioned earlier the desire to assess and compare website from developed country to the one from developing countries was not possible. Unfortunately, the developing countries had no website with some structured information on a single website about heart failure. Most of them were scientific papers, conferences, news, advertisements, or borrowed material from western websites. The developing countries need to develop these websites for the awareness among general population about common diseases. They will have the operational, tactical, and strategic benefits to deliver a good health service with limited resources, albeit this realisation and awareness is lacking.

NHS Direct and MedlinePlus are both well-established and trusted website for healthcare information. Both had good information on the subject of heart failure. MedlinePlus is clearly the better site and secured more marks than NHS Direct in general assessment and assessment of contents. However, at the same time both had some strong areas and weaknesses. I am sure the strengths and weakness of these websites will help the developer of health information website in developing countries, and they will learn from this exercise.

Analysis and Recommendations for NHS Direct

- The website has a very well structured processes in place, especially the editorial process, it discloses all biases and financial sources, it clearly tell the visitor to the website when the site was updated and when the next update is planned, logo is on every page, all information is backed up by well researched and peer reviewed papers. Thus, the strength of the site is in the procedures and processes it adopts to present the information.
- However, the information itself is weak and sketchy the contents are limited and the website

keep referring to the same few pages repeatedly whatever the search question asked. The information lacks the depth of knowledge and needs improvement.

- Many key area of information about heart failure like surgery for heart failure, support of patient in community, self-monitoring by the patient while in community and many other aspect are missing or insufficient, they need to be added.
- The website also lack interactive section, such sections maintain the interest in topic, keep the patient engaged and emphasis on the key messages. Similarly, the use of animation, video, and audio links can help the website, making it more user friendly and interesting.
- Information and many processes are in multiple layers this can be simplified.
- There is no need to have big pictures of different patients on the web pages as it does not help or improve the information or its presentation.
- The webpage offers to help book the appointment with hospital of choice but I was unable to assess the utility of the facility.
- Although the website offer contents in 12 languages, the contents of this translated service are very limited, they only give information about the service of NHS but no information about the disease itself this needs improvement.
- The help/training page for the website is not available.

It is highly recommended that the website improves its contents and use all the methods to make it more interesting and captivating for the visitor.

Analysis and Recommendation for MedlinePlus

- On the contrary the MedlinePlus is very strong in its contents and very easy to use and navigate, it uses all the aids to boost its presentation and captivate the audience but it is not clear in its processes of acquiring information as NHS Direct website . The editorial process is not very transparent; it only gives the guideline followed for the selection of source of information. It is recommended that the director of the site bring more transparency about the website processes. This will enhance the confidence of the visitor to the webpage that is already par excellence.

- Majority of the pages only quote the national library as the source of information, it is difficult to know the exact source unless the links followed for the source of information.
- It will be useful to add next intended review date of the pages.
- Many features are unique and impressive like the facility of sign language, complete translation of the contents in Spanish language, expert opinions, animation to explain the mechanism of heart failure and working of heart, and videos about the various procedures, they should be maintained and expanded to other languages.

One aspect both sites can improve is the interactive education and learning process for general population, which will prepare the community for the primary care of chronic condition, like heart failure, to be treated nearer to home. There is a need to have a separate interactive section on primary care with qualified and well-trained moderator to over see and conduct the interactive sessions. This will be much easier for an English site to do as compare to USA, purely because of geographical reason. USA can appoint regional or territorial moderators to make it practically feasible.

This exercise about the evaluation of websites clearly shows that how important and at the same time how difficult it is to be sure that the information on any website is credible, current and accurate. It is very important for developing countries to develop a sound system of health information in local languages for their population through the development of local and regional websites. It is very easy for any person or health professional to be carried away by the volume of information and make unsound decisions. It is a continuous but necessary endeavour for the websites to be on top of the current and relevant information. The paucity of health information in developing countries is alarming and an international effort is required to address the issue.

I would like the reader of this article to use these tools as frequently as possible to assess their local and regional health information websites. This will help us to validate both the tools by using them for websites in local languages and increase the strength of evaluation. A feedback and evaluation of websites by these tools will be much appreciated.

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Assessment of Website for
Health Information
APPENDIX A (Tool A)

CRITERIA			Assessment
Credibility			
	Source	<p>** Is there any information about source of information?</p> <p>Is the information about the provenance of the source is available?</p> <p>**Are name, logo, and reference on each document of the site?</p> <p>**Is name and title of author or web master on each document of the site?</p> <p>The author or webmaster has sufficient expertise and authority over the subject.</p> <p>Is the resource well known and heavily used? (consider visitor statistics, awards, acknowledgement and general standing of the resource in health community)</p> <p>Has a group or organisation taken the responsibility of the source and information?</p> <p>Are they qualified to provide this information?</p> <p>Is there ownership of copyrights and clear statement about it?</p> <p>**Are contact details available? (Example, email address)</p>	
	Disclosure	<p>**Source of finance disclosed.</p> <p>Is there any conflict of interest and disclosed?</p> <p>Any bias or influence acknowledged and disclosed?</p>	
	Relevance	<p>**Is the intended coverage and scope of the website relevant to the intended audience?</p>	
	Editorial review processes	<p>**Is there an editorial process and it is robust?</p> <p>Is there an editor or webmaster with responsibility of information on the website?</p> <p>Is there a process of scientific peer review?</p>	
	Language	<p>The resource is in English and language easy to understand.</p> <p>Is the readability of the source suitable for the audience?</p> <p>Translations in other languages are available. (especially consider the ethnicity of the local population)</p>	

	Metadata	**Is there information about information?		
Contents				
	Coverage	Are the intended audience mentioned?		
		Is the intended coverage and purpose of website explained and overview of the topic is present?		
		**Is the coverage comprehensive within the area and without major omissions?		
		Does it cover full range of the related topics/ subjects?		
		What is the retrospective coverage of the resource?		
	Accuracy	**Is the information accurate?		
		Has the information been through editing or refereeing process?		
		Is the information research based?		
		Is there information produced and disseminated by the source with a bias to produce or disseminate the information? (Note : (5) mark for no bias and then according to the level of bias)		
		Is there any mechanism for the user to flag inaccurate information?		
		Absence of grammatical and typographical errors?		
		Is the view balanced and mentions more than one option and not a single persons or organisation's opinion?		
	Currency	**Is the information up to date? (Note: Different type of information will need different schedule for updating)		
		The date of latest update is mentioned.		
		Does it clearly identify what information was up dated and review of the other information?		
		Is there what's new page?		
		Does it give date of next up date?		
Design and layout		**Is the resource well designed?		
		Is the information professionally presented?		
		Is the design consistent in all parts of the same resource?		
		Are there aids to find information and they are useful? (Example: site map, index, menu systems, and search facilities)		
		Is the navigation between links and page easy?		
		Is the image use appropriate? (Should not be only for decorative purpose)		
		Are the advertisements appropriate and clearly distinguished from editorial content? (Should not be distracting from the information and too dominating as the main purpose of the website)		
		Are there any special and unique features to design?		

Interactivity		Is there any part of website interactive? (consider quiz, CPD points for health professionals, live web pages with feed back)		
		Is there an online discussion board?		
		Is the discussion board monitored by professional moderator?		
		Is there online class or why of education?		
		Are there arrangements for confidentiality of data/ information provided by the user?		
Links /additional information		**Are there any links available for additional information and working?		
		Do they add value to the site?		
		Is there a search facility for other sources?		
Accessibility		**Is the resource available consistently?		
		What is the speed of resource and does it vary?		
		Are there any special soft ware/ hardware requirement to view all the features?		
		(Note: Mark (5) if no requirement and then (1) for hardware requirement, (2) for special software requirements which the user has to buy, (3) if software is freely available from any website, (4) if provided by the site for free down load)		
		Are graphics simple and easy to down load? (Example; too large graphics may inhibit the access to website.)		
		Is there any registration process and is it strait forward? (Note: Mark (5) if no registration required and then according to ease of registration process)		
		Charges for access are reasonable as compare to other website. Note: please mark (5) if no charges and (1) for very high, (2) for high, (3) for equal or comparable charges and (4) for charges lower than other websites.		
		Is the information in public domain? (consider copyrights restriction)		
		Geographically access for all (consider world wide)		
FAQ		Does it have a list of frequently asked questions?		
Help		The help information about the website is available and useful.		
		User support facilities are available and useful. (consider training material, courses, user support groups or online support system)		
		Telephone contact, email and contact address for technical support is available.		

- Each question was marked from zero to five,
- **No** mark was given if '**NO**' information was available (0)
 - **One** mark if the information was '**not satisfactory**' (1)
 - **Two** marks for '**satisfactory**' information (2)
 - **Three** marks for '**good**' information (3)
 - **Four** marks if the information was '**very good**' (4)

- And **five** marks for '**excellent**' information (5)
- Where marking is different, it is explained in relevant box and should be followed.

Weightings of **X 2** given to all essential criteria marked with **

Assessment of Contents of Websites for information about HEART FAILURE APPENDIX B (Tool B)

Content Coverage	Grade 0-5
Definition of heart failure	
Symptoms and signs of heart failure	
Mechanisms of heart failure	
Causes of heart failure	
Diagnosis of heart failure	
Vital statistic for heart failure	
Different option for treatment for heart failure	
Criteria for use of different treatment options for heart failure	
Complications associated with different treatment options for heart failure	
Criteria for admission in hospital for patients with heart failure	
Community based treatment for heart failure	
Advice on daily monitoring at home like weight and other criteria	
Advice on equipment used at home like home oxygen etc	
Emergency contact for doctors, hospitals & ambulance services	
Indications of surgery for heart failure	
Complication and vital statistics for surgery of heart failure	
Help with post operative recovery and rehabilitation after heart failure surgery	
Criteria for heart transplant	
Advise on heart transplant and after care	
Good and scientific data /evidence to support all the information	
Adequate information for all major ethnic groups in their language	
Contents in ethnic language are as good as in English language	
Facility to arrange appointment with health professional through the website	
Help with exercise and keep fit for patient with heart failure	
Dietary advice for patients with heart failure	
Emotional and psychological support for patients with heart failure	
Discussion board for patients	
Professional moderator available and clearly mention his/her qualifications	
Moderation is frequent enough to be helpful	
On line classes or interactive service for the patients education and learning	
'What is new' and up to date information page	
Heart failure resource	
Alternative therapies with discussion of pro and cons	
Addition or unique features	

- Each information content is marked from zero to five,
- **No** mark was given if '**NO**' information was available (0)
 - **One** mark if the information was '**not satisfactory**' (1)

- **Two** marks for '**satisfactory**' information (2)
- **Three** marks for '**good**' information (3)
- **Four** marks if the information was '**very good**' (4)
- And **five** marks for '**excellent**' information (5)