



Minervation

The LIDA Instrument

Minervation validation instrument for health care web sites

Full Version (3.0) containing instructions
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This, third version 2023

Most internet users look for health information online,¹⁻³ but finding unreliable information can lead to harm.⁴ There is no shortage of health information out there. The problem most people have is finding **good quality** information that's **relevant** to them.

These are the challenges to information providers:

1. How can you make sure that the information you are providing is accessible, relevant and high quality?
2. Could your site fall foul of legislation affecting visually impaired Internet users?
3. Does your site's poor usability waste your audience's time by making it hard for them to find what they need?
4. How can you be sure that the information you publish is up-to-date, accurate and reliable?

These difficulties have prompted Minervation to develop a set of free validation tools to help web site developers answer these questions.

How to use this document:

For Level 1 (Accessibility) go to <https://wave.webaim.org/> and enter the URL of the page you wish to assess. You will need this information to answer questions 1.1 and 1.2. For 1.3, you need to right-click on the page in question and "View Source" to check the document metadata.

For questions 1.5, 1.6, Level 2 (Usability) and Level 3 (Reliability), view the web site as normal and enter your scores in the boxes provided. Score each question on a scale of zero to 3, where:

- 0 = Never
- 1 = Sometimes
- 2 = Mostly
- 3 = Always

The Minervalidation tool evaluates the design and content of health web sites.

The tool measures three areas:

1. Accessibility

- a. Can your audience access your web site?
- b. Does your site conform to legal accessibility standards?
- c. Are your competitors ahead of you?
- d. Does your site reflect “best practice” in coding and relevant metadata?

2. Usability

- a. Can your users find what they need to know?
- b. Can they use your web site effectively?
- c. What does it cost people to use your web site?
- d. Do your site visitors return to use the site again and again?

3. Reliability

- a. Does your site keep up to date with the latest research?
- b. Does your site reflect best current knowledge?
- c. Do your users trust you to provide them with unbiased information?
- d. Does your site conform to the highest information quality standards throughout?
- e. Is your site harmful or dangerous?

Why does validation matter?

These three areas are important for a number of reasons: some legal, some political, some financial:

Level 1 Accessibility

- Making sure that web sites are accessible to *all* is now law.⁵⁻⁷
- By conforming to accessibility standards, NHS and not-for-profit sites producing health information will be permitted to join the NHS Information Partners Programme⁸, and will therefore be searchable via NHS Direct Online⁹, leading to increased traffic.
- Research information which is available full-text online has a higher impact than information which has restricted access.¹⁰

Level 2 Usability

- If people cannot use your web site effectively, they’ll go elsewhere.¹¹⁻¹³
- Your web site may be costing your users time which they cannot afford.¹⁴⁻¹⁶
- Most health web sites present information in a way that is hard for users to understand.¹⁷⁻¹⁹
- If your site suffers from poor usability, your users may not come back.^{13;20;20-22}

Level 3 Reliability

- Users will not trust your web site if it does not have a clear quality control policy.²³
- Web health information often contains inaccuracies²² and is usually incomplete.^{24;25}
- In some cases web sites have actually been proven to be harmful or dangerous.²⁶⁻³⁰
Can you be sure that your site is safe?
- Even “evidence-based” guidelines have been shown to be subject to bias.^{31;32}

Aren’t there other evaluation tools we can use?

- Yes, there are hundreds, but almost none have been tested for their reliability.³³
- Those that have been tested are mostly unreliable.³⁴
- The few that are reliable do not adequately address the issues of accessibility and usability.³⁵
- Information which is validated according to well-known quality schemes still tends to be unusable.³⁶

Level 1 Accessibility	
<ul style="list-style-type: none"> • Does the web site meet W3C standards? • Can users access the information in the web site? • Is the web site "future proof"? 	
<p>Instructions for 1.1 and 1.2:</p> <ol style="list-style-type: none"> 1. Go to https://wave.webaim.org/ and enter the URL of the page 2. Click Details <ol style="list-style-type: none"> a. If there are no red warnings AND no orange warnings, score 3 for 1.1 and 1.2 b. If there are no red warnings BUT there are orange warnings, look at the details of the orange warning (click them and the tool will make the page jump to the relevant place) <ol style="list-style-type: none"> i. If they relate to the visibility of page content (e.g. alternative text for images, text size, colour contrast), score 2 for 1.2 and 3 for 1.1. ii. If they relate to other features of the page, score 2 for 1.1 and 3 for 1.1. iii. If they relate to both, score 2 for both 1.1 and 1.2 c. If there are red warnings, click on them to examine them <ol style="list-style-type: none"> i. If they relate to the visibility of important page content (e.g. missing alternative text on an important image such as a graph, colour contrast of the menus, sub-headings or text content), score 0 for 1.2 ii. If they relate to the visibility of unimportant page content (e.g. missing alternative text on generic images such as icons, colour contrast of buttons or layout graphics), score 1 for 1.2 iii. If they relate to other features of the page, and the error is likely to affect user experience, score 0 for 1.1 iv. Otherwise score 1 for 1.1 	
<p>1.1 Coding standards Characteristics which identify a web page so that web browsers can interpret it correctly.</p>	<input style="width: 40px; height: 40px; border: 2px solid black;" type="checkbox"/>
1.1.1 Correct HTML and metadata	
1.1.2 Correct information structure	
<p>1.2 Access Restrictions These factors can restrict users' access to the site, especially those with disabilities.</p>	<input style="width: 40px; height: 40px; border: 2px solid black;" type="checkbox"/>
1.2.1 Text alternatives	
1.2.2 Accessible code	
1.3.1 Accessible colour contrast	
<p>1.3 Search Metadata Appropriate metadata will ensure compatibility with other systems and visibility in search engines.</p>	<input style="width: 40px; height: 40px; border: 2px solid black;" type="checkbox"/>
<p>Instructions</p> <ol style="list-style-type: none"> 1. Visit the page and right-click on it. 2. The contextual menu should have a "View Page Source" option 3. Look between the header tags (<head> and </head>) for <meta> tags specifying the title, description and keywords of the page. 4. Score 1 point for each of these that are present and which contain content that's relevant to the page content (judgment required). 	

1.4 Browser Test <i>The web site should work in all commonly used browsers and platforms.</i>	<input type="checkbox"/>
<i>You should test the site on at least two different mainstream browsers (Chrome plus one of Safari, Firefox or Edge), screen sizes and on a mobile phone.</i> <ul style="list-style-type: none"><i>If it works equally well on different browsers, sizes and devices, score 3</i><i>If some minor functionality is missing on different browsers, score 2</i><i>If some functionality is missing on the mobile phone version, score 1</i><i>If it fails to work on any of the platforms you try, score 0</i>	
1.5 Registration <i>Is the information available full text without registration, login or subscription?¹⁰</i>	<input type="checkbox"/>
<i>3 = No login or registration essential for certain features (e.g. eCommunity) 1 = Free registration 0 = Paid registration</i>	

Level 2 Usability	
<ul style="list-style-type: none"> • Can users find the information they need? • Poor usability increases costs (for both you and your users) • Good usability increases usage, stickability and revenues. 	
2.1 Clarity <i>Clear design increases usability by promoting accessibility, signposting content and encouraging exploration.</i> ^{37-40;40;41}	Total: <input style="width: 40px; height: 40px; border: 2px solid black;" type="text"/>
2.1.1 Is there a clear statement of who this web site is for? <ul style="list-style-type: none"> ○ Did it take you long to find this information (No=2, Yes=1, Couldn't=0)? ○ Is this information on the home page (Yes = 3)? 	<input style="width: 40px; height: 40px; border: 2px solid black;" type="text"/>
2.1.2 Is the level of detail appropriate to their level of knowledge? <i>When assessing this question, try to think of a typical user from the group specified in 2.1.1.</i> <ul style="list-style-type: none"> ○ Does the site lead the user into the right level of detail in the right sequence? ○ Is there a lot of jargon that they would not understand? ○ Is the language of the right complexity? If unsure, you may wish to test it using this Flesch-Kincaid calculator ○ Does the site make good use of graphics to explain complex information? 	<input style="width: 40px; height: 40px; border: 2px solid black;" type="text"/>
2.1.3 Is the layout of the main block of information clear and readable? <i>Look at the "block of content"</i> <ul style="list-style-type: none"> ○ Is the font size appropriate? ○ Scannability: use of subheadings? ○ Use of bulleted lists and internal links within a long document (good) ○ Text wrapping ○ Length of the page (long = bad; may need "go back to the top" links) 	<input style="width: 40px; height: 40px; border: 2px solid black;" type="text"/>
2.1.4 Is the navigation clear and well structured? <i>Look at the buttons, links and menus</i> <ul style="list-style-type: none"> ○ Can you tell what is a link or button? ○ Are they readable? ○ Is it clear which menu you need to click to find what you need (e.g. mixing up subtopics with publication types would make this hard)? 	<input style="width: 40px; height: 40px; border: 2px solid black;" type="text"/>
2.1.5 Can you always tell your current location in the site? <ul style="list-style-type: none"> ○ There may be breadcrumbs or changes in the menu system telling you which section you're in, though they can be confusing. 	<input style="width: 40px; height: 40px; border: 2px solid black;" type="text"/>
2.1.6 Is the colour scheme appropriate and engaging? <ul style="list-style-type: none"> ○ Is it appropriate for the target audience? ○ Is it tasteful? ○ Is it readable? ○ Print out a black and white page to see if there's enough contrast for colour blind people. ○ Remember to check the colours of mouse-overs and previously-clicked links etc. 	<input style="width: 40px; height: 40px; border: 2px solid black;" type="text"/>

Additional Comments on Clarity:

2.2 Consistency	Total: <input style="width: 50px; height: 30px; border: 2px solid black;" type="text"/>
<p><i>Consistent design helps users to learn how a web site works and where to look for the information they need.^{42;43}</i></p>	
<p>2.2.1 Is the same page layout used throughout the site?</p> <p><i>Are the menus, text blocks, header, footer etc consistent throughout?</i></p> <ul style="list-style-type: none"> ○ <i>Sometimes it's a good thing to have a different layout, for example when moving from a text-heavy explanation page into a multiple choice question, or if it's a gateway site that links to other resources.</i> ○ <i>Ask yourself, would this inconsistency be confusing to the user? Does it make sense to use a different layout for this page? Can the user still "retrace their steps" if they need to?</i> 	<input style="width: 50px; height: 30px; border: 2px solid black;" type="text"/>
<p>2.2.2 Do navigational links have a consistent function?</p> <p><i>Think about what happens when you click the link, e.g.</i></p> <ul style="list-style-type: none"> ○ <i>Do external links always open in a new window?</i> ○ <i>Does the home page or logo link always take you to the home page?</i> ○ <i>Does the search or feedback button always work in the same way?</i> <p><i>Again, inconsistency may be appropriate depending on whether it would make sense to the user. If it doesn't make sense to you, it certainly won't make sense to everyday users.</i></p>	<input style="width: 50px; height: 30px; border: 2px solid black;" type="text"/>
<p>2.2.3 Is the site structure (categories or organisation of pages) applied consistently?</p> <p><i>Think about whether the subsections used in different areas of the site are consistent.</i></p> <ul style="list-style-type: none"> ○ <i>If they are, users will find it easier to predict where to find what they need on the site.</i> ○ <i>The site map should help to assess this question.</i> 	<input style="width: 50px; height: 30px; border: 2px solid black;" type="text"/>

Additional Comments on Consistency:

2.3 Functionality	Total: <input style="width: 50px; height: 30px; border: 2px solid black;" type="text"/>
<p><i>Web sites must provide users with the right tools to find what they need without overburdening them with unnecessary functions^{40;44}.</i></p>	
<p>2.3.1 Does the site provide an effective search facility?</p> <p><i>Browse to a section and think of a typical term that might require that information and a synonymous term people might search for which isn't on that page (e.g. Fluoxetine and Prozac). Do a search for each.</i></p> <ul style="list-style-type: none"> ○ <i>Did you find the page in question?</i> ○ <i>Does it work with synonyms?</i> ○ <i>Is the ranking of results sensible?</i> ○ <i>Does it display sufficient information on the hits for you to choose the right one?</i> ○ <i>Can you refine your search?</i> ○ <i>Is the complexity of the search engine appropriate for the site?</i> 	<input style="width: 50px; height: 30px; border: 2px solid black;" type="text"/>
<p>2.3.2 Does the site provide effective browsing facilities?</p> <p><i>As above, find a page and think of a typical query that a user of this site might have which requires that page. Go to the site home page.</i></p> <ul style="list-style-type: none"> ○ <i>Can you find your page by browsing?</i> ○ <i>Would it be obvious what to click on to get that page?</i> ○ <i>How many clicks did it take (target ≤ 3)?</i> 	<input style="width: 50px; height: 30px; border: 2px solid black;" type="text"/>

<p>2.3.3 Does the design minimise the cognitive overhead of using the site?</p> <p><i>Cognitive overhead means “the additional effort and concentration necessary to maintain several tasks or trails at one time”.⁴⁵ So, it’s a general term to describe whether a web site requires its users to learn, do, remember or read lot of unnecessary information before they get what they want.</i></p> <ul style="list-style-type: none"> ○ <i>If you very quickly get accustomed to a site and how it works, it probably has a low (i.e. good) cognitive overhead.</i> ○ <i>The sorts of things that increase cognitive overhead are: having to go to lots of different areas to get the information you need; not being able to tell where to go to get what you want; or not getting what you expected when you click on a link; unusual design or layout that is inconsistent with user expectations, especially in search engine and results pages⁴⁶.</i> 	<input type="checkbox"/>
<p>2.3.4 Does the site support the normal browser navigational tools?</p> <p><i>A usable web site shouldn’t change what you’d expect to be able to do with your web browser:</i></p> <ul style="list-style-type: none"> ○ <i>e.g. mouse-over a link to get the target, page address displayed in the address bar, title in the window title, browser toolbar buttons present and consistent (back, forward, home, etc)</i> 	<input type="checkbox"/>
<p>2.3.5 Can you use the site without third party plug-ins?</p> <p><i>Typical scores:</i></p> <ul style="list-style-type: none"> ○ <i>No plug-ins or PDF equivalent of text that’s available elsewhere on the site = 3</i> ○ <i>Appropriate use of freely available plug-in (such as PDF) and it adds value = 2</i> ○ <i>As above but it could have been done in another way without a plug-in = 1</i> ○ <i>Gratuitous = 0</i> 	<input type="checkbox"/>

Additional Comments on Functionality:

<p>2.4 Engagability</p> <p><i>Web sites which provide users with a satisfying experience are more effective and more popular^{47;48}.</i></p>	<p>Total:</p> <input type="checkbox"/>
<p>2.4.1 Can the user make an effective judgment of whether the site applies to them?</p> <ul style="list-style-type: none"> ○ <i>Could they make this judgment within a few seconds of visiting the site?</i> ○ <i>Can the user quickly find the subsection of the site that has been produced specifically for them?</i> 	<input type="checkbox"/>
<p>2.4.2 Is the web site interactive?</p> <p><i>Newsletters, eCommunities, chat, enquiry and feedback forms, animations or illustrations:</i></p> <ul style="list-style-type: none"> ○ <i>Think about how the site compares with others in the same topic.</i> ○ <i>For newsletters – look for the ability to specify topics of interest, rather than general updates.</i> ○ <i>For eCommunities – look for active bulletin boards with lots of users.</i> ○ <i>For feedback mechanisms – look for forms rather than simple email addresses; is it clear who you are sending feedback to?</i> 	<input type="checkbox"/>
<p>2.4.3 Can the user personalise their experience of using the site?</p>	<input type="checkbox"/>
<p>2.4.4 Does the web site integrate non-textual media?</p> <p><i>This includes drawings, diagrams, graphs, photographs as well as audio, video and animation:</i></p> <ul style="list-style-type: none"> ○ <i>Do they look professional?</i> ○ <i>Are they appropriate?</i> 	<input type="checkbox"/>

Additional Comments on Engagability:

Level 3 Reliability	
<p>Does the site provide comprehensive, relevant and unbiased information? If not, it is unreliable and may be harmful.⁴ In a systematic review of studies of the quality of health information on the web, 70% found that quality is a problem¹⁷.</p>	
<p>3.1 Currency</p> <p>If a site is not updated regularly, new evidence may emerge which conflicts with it and which renders the site redundant⁴⁹.</p>	<p>Total:</p> <input type="checkbox"/>
<p>3.1.1 Does the site respond to recent events?</p> <p>Look for coverage of recent events, news items, etc.</p>	<input type="checkbox"/>
<p>3.1.2 Can users submit comments on specific content?</p> <p>Look for 'in page' comments (these often appear towards the bottom of the page), rather than simple feedback functionality which does not affect the actual site content.</p>	<input type="checkbox"/>
<p>3.1.3 Is site content updated at an appropriate interval?</p> <p>Is the clinical content updated frequently enough to be up to date? Look for a statement in site policy, the date on each page.</p> <ul style="list-style-type: none"> ○ Can't tell = 0; ○ For treatment, an ideal target would be 6 monthly updates; for diagnosis and background information it can be longer. 	<input type="checkbox"/>

Additional Comments on Currency:

<p>3.2 Conflicts of interest</p> <p>Surveys show that disclosure of sponsorship is a key issue for users of health web sites.¹⁷</p>	<p>Total:</p> <input type="checkbox"/>
<p>3.2.1 Is it clear who runs the site?</p>	<input type="checkbox"/>
<p>3.2.2 Is it clear who pays for the site?</p> <p>Current practice is not good in this area. If you have to look for organisational reports, etc, which disclose funding sources, then that scores 1.</p>	<input type="checkbox"/>
<p>3.2.3 Is there a declaration of the objectives of the people who run the site?</p> <p>Are these consistent with the objective of providing you with unbiased and accurate information?</p>	<input type="checkbox"/>

Additional Comments on Conflicts of Interest:

3.3 Content production <i>Where information is not gathered using a rigorous methodology, the findings are likely to be biased^{31;50-52}.</i>	Total: <input type="checkbox"/>
3.3.1 Does the site report a clear content production method? <i>Look for a statement that tells you how information on the site was produced and its quality checked. This might be in an About Us, About this Site or Editorial Policy section.</i>	<input type="checkbox"/>
3.3.2 Is this a robust method? <i>Ideally, it should include:</i> <ul style="list-style-type: none"> ○ <i>User-driven identification of user needs and validation of site design</i> ○ <i>Comprehensive searching for relevant literature</i> ○ <i>Appraisal of the validity of sources using evidence-based guidelines</i> ○ <i>Review of the site content by independent experts</i> ○ <i>Review of the site by target audience</i> 	<input type="checkbox"/>
3.3.3 Can the information be checked from original sources? <i>Use your judgment to decide what statements require references. Background information may not need a reference, but clinical definitions of disease usually do; statements of the findings of research certainly do.</i>	<input type="checkbox"/>

Additional Comments on Content Production:

Questions 3.4 and 3.5 are supplemental questions which require a detailed examination of the web site production process. This may not be possible from looking at the site; you may have to find out more by contacting the host organisation.

3.4 Content production procedure - supplemental	Total:
<i>Where the purpose is providing high quality answers to users' questions about health care.</i>	<input type="checkbox"/>
3.4.1 Are the audience needs identified in advance? <i>Determining needs in advance leads to more robust answers⁵³; involving users in this process leads to more effective²⁰, satisfying (by as much as 40%) and cheaper¹⁶ web solutions.</i>	<input type="checkbox"/>
3.4.2 Is comprehensive literature searching conducted? <i>This is necessary to make sure all the relevant documents are found⁵⁴, and language⁵⁵ and publication⁵⁶ biases are eliminated.</i>	<input type="checkbox"/>
3.4.3 Are retrieved documents critically appraised? <i>Critical appraisal should be conducted independently using validated appraisal tools.⁵⁷</i>	<input type="checkbox"/>
3.4.4 Is content authored by subject experts?	<input type="checkbox"/>
3.4.5 Is content reviewed by an independent expert or panel?	<input type="checkbox"/>

Additional Comments on Content Production – Supplemental:

3.5 Output of content - supplemental	Total:
<i>Does the site provide accurate and reliable information?</i>	<input type="checkbox"/>
3.5.1 Has literature searching found the right information? <i>Are there any important data sources missing from the search?</i>	<input type="checkbox"/>
3.5.2 Does the content check out? <i>Is the content consistent with current best practice in the topic area?</i>	<input type="checkbox"/>
3.5.3 Is the content accurate? <i>Here we're checking for editorial mistakes such as the classification of information (e.g. information about metastatic cancer located in a section header about non-metastatic cancer), use of incorrect references and spelling mistakes.</i>	<input type="checkbox"/>

Additional Comments on Output of Content – Supplemental:

Summary Sheet

Calculate totals for each section and record them here

URL: _____

Site Owner: _____

1 Accessibility Total

Total (out of 63):

Enter the totals from Level 1:

- 1.1-4. Automated test out of 57
- 1.5. Browser test out of 3
- 1.6 Full text availability out of 3

Key comments / priorities:

2 Usability Total

Total (out of 54):

Enter the totals from Level 2:

- 2.1. Clarity out of 18
- 2.2. Consistency out of 9
- 2.3. Functionality out of 15
- 2.4. Engagability out of 12

Key comments / priorities:

3 Reliability Total

Total (out of 27):

Enter the totals from Level 3:

- 3.1. Currency out of 9
- 3.2. Conflicts of Interest out of 9
- 3.3. Content Production out of 9
- 3.4. Content Production - Supplemental out of 15
- 3.5. Output of Content - Supplemental out of 9

Key comments / priorities:

Supplementary Total (out of 24):

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