MICHIGAN STATE UNIVERSITY | Usability/Accessibility Research and Consulting

To: Robert Van Rennes, Big Ten Academic Alliance
From: Graham L. Pierce, MSU Usability/Accessibility Research and Consulting
CC: Heidi Schroeder, MSU Libraries
Subject: McGraw-Hill AccessMedicine High-Level Accessibility Evaluation
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MSU Usability/Accessibility Research and Consulting (MSU UARC) conducted a high-level accessibility evaluation of McGraw-Hill AccessMedicine to evaluate its conformance with WCAG 2.0 AA Criteria. This evaluation did not include all functionality or content of the site or all WCAG 2.0 AA Success Criteria.

During this evaluation, a number of issues were found that will make the site and its content impossible to use for some individuals with disabilities, and difficult to use for many others.

Keyboard users, including screen reader users and users with dexterity impairments, will be unable to access some site functionality. Some critical interactive elements cannot be reached or opened via keyboard. Many interactive elements that can be reached lack a sufficiently visible focus indicator, making it difficult or impossible for many keyboard-only users to effectively use them, as they cannot determine when they have reached the correct element. Focus order is also incorrect in places, further increasing the difficulty of using the site with a keyboard.

Individuals with visual impairments, including those that rely on screen readers, will have additional problems. Some content is read out incorrectly, and some structural information is not appropriately conveyed to users, making it difficult to understand content organization in places. Some form inputs are not appropriately labeled, making those inputs difficult or impossible to use for those that rely on screen readers. Custom elements do not correctly announce themselves to screen readers, making them difficult or impossible to understand and use. Many images lack appropriate alternative text, significantly impacting users with visual impairments.

Other issues were found that will make it difficult for users with a variety of disabilities to effectively use the system, including insufficient link context, images of text being used in place of styled text, insufficient color contrast, and insufficiently descriptive page titles.

To improve access for users with disabilities, UARC recommends a full WCAG 2.0 AA evaluation and that the problems discovered be remediated.

Note: For the purposes of this high-level review, results for "hemangioma" were used as an example of a Search Results page, "Harrison's Principles of Internal Medicine, 20e" was used as an example of a Book page, "Harrison's Principles of Internal Medicine, 20e, Chapter 1: The Practice of Medicine" was used as an example of a Chapter page, and "Harrison's Principles of Internal Medicine, 20e, VIDEO CP11-1: Clinical Procedures Tutorial: IV Insertion" was used as an example of a Video page.

For reference, a screenshot of the Home Page at the time this evaluation was completed has been included at the end of this memo.

High-Level Findings

Document Structure

- Headings are not correctly used to organize content. [WCAG 2.0 SC 1.3.1]
  - "AccessMedicine" and "McGraw-Hill Medical" headings in footer should be h2s, not h3s
  - Subheadings in footer (e.g., "Books", "Quick Reference", "Sites") should be tagged as headings
  - "AccessMedicine" logo at top of page should be tagged as a heading (h1 on Home page and h2 on all other pages)
  - On the Home page, subheadings under "AccessMedicine Channel", "Harrison's Channel", and "Case of the Week" should be h3s, not h1s
  - On the Home page, "MyAccess" should be tagged as a heading (h2)
  - On the Home page, "New on AccessMedicine" and "Popular Chapters on AccessMedicine" should be h2s, not h1s
  - On the Search Results page, the primary heading (e.g., "hemangioma") should be an h1, not an h4
  - On the Search Results page, "Modify Search" should be tagged as a heading (h2)
  - On the Search Results page, results (e.g., "Childhood Hemangiomas") should be h2s, not h4s
  - On the Chapter page, "Figure 1-1" should be an h2, not an h6
  - In the Sections sidebar on the Chapter page, "Jump to a Section" should be an h1, not an h5
  - In the Citation lightbox on the Chapter page, "Citation" should be an h1, not an h2, and "AMA Citation" and "MLA Citation" should be tagged as headings (h2s)
  - In the Send Email lightbox on the Chapter page, "Send Email" should be an h1, not an h2
  - On the Videos page, "Jump to:" should be tagged as a heading (h2)
- On the Book Library page, books are not organized into a list or by headings in both Grid and List views. [WCAG 2.0 SC 1.3.1]
- Lists under "AccessMedicine" in footer should be broken up into separate lists or sub-lists (e.g., items under "Books" and the heading for "Quick Reference" shouldn't be at the same list level). [WCAG 2.0 SC 1.3.1]
- In the page footer, "Terms of Use", "Privacy Policy", etc. should be coded into a programmatic list. [WCAG 2.0 SC 1.3.1]
- On the Book Library page, "Tools" is incorrectly coded into a one-item list. [WCAG 2.0 SC 1.3.1]
- On the Video page, the list under "Jump to:" should be coded as a programmatic list. [WCAG 2.0 SC 1.3.1]
- The AccessMedicine search bar dropdown label is incorrectly read after the associated dropdown element. [WCAG 2.0 SC 1.3.2]
- Multiple blank elements and inputs are read out in the AccessMedicine search bar. [WCAG 2.0 SC 1.3.2]
- On the Home page, content that is not visible is read out in the "AccessMedicine Channel", "Harrison's Channel", and "Case of the Week" sections (e.g., "Why is

everyone searching" is read out when only "Why is everyone" is visible on screen). [WCAG 2.0 SC 1.3.2]

- On the Search Results page, result details are incorrectly read out before the headings they are organized by (e.g., "Book Chapter" is read before the "Childhood Hemangiomas" heading). [WCAG 2.0 SC 1.3.2]

Keyboard Support

- On the Home page, "Create a Free Profile" button and "Learn more about MyAccess" link cannot be reached via keyboard. [WCAG 2.0 SC 2.1.1]
- On the Search Results page, "Select Textbooks" and "Topics" dropdowns cannot be reached via keyboard. [WCAG 2.0 SC 2.1.1]
- In the Sections sidebar on the Chapter page, "Expand All Sections" link and close button cannot be reached via keyboard. [WCAG 2.0 SC 2.1.1]
- On the Chapter page, +/- buttons to expand/collapse sections of text (e.g., "+ Further Reading") cannot be reached via keyboard. [WCAG 2.0 SC 2.1.1]
- Focus incorrectly goes to invisible content throughout the site. [WCAG 2.0 SC 2.4.7]
  - o Invisible element after "About Search" link
  - o Invisible, non-interactive elements between items in the book carousel on the Home page
  - o Invisible, non-interactive elements between each result on the Search Results page
  - o Contents of Sections sidebar when it is not open on the Chapter page
  - o Page content behind lightboxes when they are open on the Chapter page
- Focus goes to duplicate links throughout the site. [WCAG 2.0 SC 2.4.7]
  - o Images and text for the same links in the "AccessMedicine Channel", "Harrison's Channel", and "Case of the Week" sections on the Home page
  - o Book covers and titles on the Search Results page
  - o Video thumbnails and titles on the Book page
- On the Home page, advancing focus in the "AccessMedicine Channel" and "Case of the Week" sections causes unexpected content that is not otherwise visible to appear (cannot be reached via mouse; no indicators that hidden content is present). [WCAG 2.0 SC 2.4.3]
- On the Home page, using the previous and next buttons in the book carousel does not consistently reset keyboard focus within the carousel list. [WCAG 2.0 SC 2.4.3]
- On the Book Library page, focus goes to the book on right before the book on left in first row, then from left to right in subsequent rows. [WCAG 2.0 SC 2.4.3]
- On the Chapter page, focus does not go to the Sections sidebar immediately when it is opened. [WCAG 2.0 SC 2.4.3]
- On the Chapter page, closing the Citation lightbox resets focus to the top of the page. [WCAG 2.0 SC 2.4.3]
- Focus is not sufficiently visible for a variety of interactive content. [WCAG 2.0 SC 2.4.7]
  - o Cookie/privacy notice bar at bottom of page obscures focus when it is present
  - o "Skip to Main Content" link, "Sign In" button, and search button (magnifying glass icon) at top of page
  - o McGraw-Hill icon in footer

- Book covers in book carousel, image links in the "AccessMedicine Channel", "Harrison's Channel", and "Case of the Week" sections, and "Sign In" button (under "MyAccess") on the Home page
- "Tools", "Grid", and "List" buttons on the Book Library page
- "CME Eligible" checkbox on the Book Library page
- "Go to Review Questions", "Go to Cases", and search buttons on the Book page
- Book cover on the Chapter page
- Search button (in Search Book bar) on the Chapter page
- "Full Chapter" and "Figures" tabs on the Chapter page
- Volume slider in the ReadSpeaker player on the Chapter page
- Video player controls on the Video page

Navigation

- The Home page does not have an appropriately descriptive title (the site name, "McGraw-Hill Medical", is not included). [WCAG 2.0 SC 2.4.2]
- On the Home page, there is insufficient context for previous and next buttons in book carousel when read by screen readers. [WCAG 2.0 SC 2.4.4]

Forms and Data Submission

- On the Search Results page, the "Modify Search" text input and dropdown do not have appropriate programmatic labels. [WCAG 2.0 SC 3.3.2]
- On the Search Results page, checkboxes under "Filter Results" are not programmatically associated with grouping label ("Format"). [WCAG 2.0 SC 3.3.2]
- In the Send Email lightbox on the Chapter page, checkbox is not programmatically labeled. [WCAG 2.0 SC 3.3.2]

Images

- Appropriate alternative text is not provided for many images. [WCAG 2.0 SC 1.1.1]
  - "Silverchair" is not appropriate alternative text for "Powered by Silverchair Information/Systems" graphic in footer
  - Previous/next buttons in book carousel on Home page
  - Information icon (next to "Get Alerts") on Home page
  - Profile icons are decorative, and should have null alternative text in the "AccessMedicine Channel", "Harrison's Channel", and "Case of the Week" sections on the Home page
  - Book cover under "New on AccessMedicine" is decorative, and should have null alternative text on the Home page
  - Print icons on Chapter page
- On the Chapter page, figure captions (e.g., "Source: J.L. Jameson...") are images of text instead of styled text. [WCAG 2.0 SC 1.4.5]

Color and Visual Characteristics

- Light blue text on light grey background (e.g., navigation dropdown items on hover), light blue text on grey (e.g., links in footer), light grey text on white (e.g., "Search AccessMedicine"; links under "AccessMedicine Channel", "Harrison's Channel", and "Case of the Week" on Home page; "Search Textbook" on Book page and in search

bar on Chapter page), grey text on white (text under "AccessMedicine Channel", "Harrison's Channel", and "Case of the Week" on Home page), and white text on grey ("List"/"Grid" when not selected on Search Results page, ReadSpeaker volume and settings icons on Chapter page) have insufficient contrast. [WCAG 2.0 SC 1.4.3]

Custom Elements and Dynamic Content

- Roles and values (i.e., that they open dropdowns and whether they are expanded or collapsed) are not provided for navigation dropdown items (e.g., "McGraw-Hill Medical", "Support", "Sign In", "Books", "Quick Reference"), and screen readers are not notified when they are opened or closed. [WCAG 2.0 SC 4.1.2]
- On the Home page, screen readers are not notified when content appears after the "Get Alerts" information icon receives focus, and the content is not read out. [WCAG 2.0 SC 4.1.2]
- On the Search Results page, screen readers are not appropriately notified when content appears after activating the "Add Term" button. [WCAG 2.0 SC 4.1.2]
- On the Search Results page, screen readers are not notified when results are updated by filters (e.g., when checkboxes are selected/deselected). [WCAG 2.0 SC 4.1.2]
- On the Book Library page, role and value (i.e., that it opens a dropdown and whether it is expanded or collapsed) are not provided for "Tools", and screen readers are not notified when it is opened or closed. [WCAG 2.0 SC 4.1.2]
- On the Book Library page, roles and values (i.e., that they are tabs and whether they are selected) are not provided for "Grid" and "List". [WCAG 2.0 SC 4.1.2]
- On the Book page, roles and values (i.e., that they expand/collapse and whether they are expanded or collapsed) are not provided for section expanders (e.g., "+ Part 1: The Profession of Medicine"), and screen readers are not notified when they are opened or closed. [WCAG 2.0 SC 4.1.2]
- On the Book page, screen readers are not notified when the "Show Chapters" and "Hide Chapters" buttons are activated and content appears/disappears. [WCAG 2.0 SC 4.1.2]
- On the Chapter page, screen readers are not notified when lightboxes or sidebars are opened or closed. [WCAG 2.0 SC 4.1.2]
- On the Chapter page, roles and values (i.e., that they are tabs and whether they are selected) are not provided for "Full Chapter" and "Figures", and screen readers are not notified when they are changed. [WCAG 2.0 SC 4.1.2]
- In the ReadSpeaker Settings lightbox on the Chapter page, screen readers are not notified when help information appears (e.g., after activating icon next to "Text highlighting"). [WCAG 2.0 SC 4.1.2]
- On the Video page, screen readers are not notified when the "Jump to" list appears. [WCAG 2.0 SC 4.1.2]

Home Page Screenshot