Scientific document report

CDC Re-issue project

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Overview

The Centers for Disease Control and Prevention (CDC) commissioned the redesign of a previously published fact sheet for online distribution. This report surveys the printed factsheet and suggests changes needed for an online format.

Structural analysis

The following analysis addresses the use of CRAP design principles and the necessary amendments for converting a print document into an online document meant for wide distribution.

Fonts

A serif typeface (Times New Roman) is used for the headings and body text. Serif typefaces are suitable for print documentation but make for difficult reading in online formats. The headings and body text are also too similar in appearance. The headings are slightly larger and bolded, however, the difference is not substantial enough to quickly differentiate the headings. Use strong contrast for quick scanning and skimming. Select sans serif typefaces for the body text and headings. Use a slightly different font for the headings (example, use Avenir Book for the body text and Avenir Medium for the headings). Use a larger font size for the headings to highlight their difference from the body text.

Graphics

Health professionals are often inundated with different scientific documents. Using graphics and figures throughout this factsheet results in an accessible reference for health professionals. Use tables to present condensed statistical information. Since most people are visual learners, use tables and figures to present data. Use colours to format the graphics for easy readability. The use of colours in the graphics will not add to the production expense of the CDC.

Headings

The headings are not close enough to their respective paragraphs. Use CRAP design principles and have each title ‘hug’ its content. Question

style headings are suitable for troubleshooting questions, FAQs, or marketing content. Topics regarding conceptual information, reference material, and procedural tasks use concise and descriptive headings (*IBM Style Guide).* Considering the audience of this factsheet is comprised of working professionals who are most likely familiar with the basic concepts outlined, avoid using question style headings that are read as condescending. The question style headings in this factsheet are also not specific enough. For example, the paragraph under the heading **'What are the symptoms of ulcers?'** includes statistical information not disclosed in the heading. Health professionals skimming or scanning through nonspecific question style headings must go through each paragraph to find the information they need. The headings are in sentence case which makes for easy scanning. Maintain sentence case style headings in the online document.

Design principles

The document title (Factsheet for Health Care Providers) is underlined and made separate from the rest of the document. The capitalization of all the words in the title also separates it from the design of the rest of the document. Place the document title and date before the "Helicobacter pylori" graphic and use a light and different coloured font to distinguish it from the rest of the text. The use of a different colour also makes it easier to find key information like the date the document was last updated. There are too many small paragraphs scattered throughout the document that make for difficult scanning. Convert some of these paragraphs into graphics so readers can easily find key information. Ensure that headings throughout the document are not split between pages. Place the CDC logo and governmental seal in a horizontal banner at the top of the document. The document has two columns with centre aligned text. The result is that the information in the columns is not separated and the contrast between the two columns is lost. Reset the margins of the columns so that there is enough space between them. Reset the margins of the page so that there is enough white space to act as a contrast with the dense text. Ensure that all text, graphics, and content in the document are left aligned to avoid rivers of white space. Continuous left alignment throughout the document also appeals to readers' desire for repetition. Place figures and graphics at the top of the page, not the bottom. Place all supplemental reference material in one column so the reader can quickly scan through them.

Parameters of a scientific document

Write a brief abstract or overview of the content presented in the factsheet. Since this document is an informational overview, separate the contents by tenses (past, present, future). Use concise conceptual headings (like 'origin of H. pylori", and "diagnosis and testing of h. pylori") to highlight the importance of each paragraph. Concise titles answer the question, "why should I read this paragraph?". Index key terms and concepts throughout the document and insert an index that readers can refer to for quick and easy access to important information. Write a concise conclusion that recaptures the main concepts discussed throughout the document.

Data retrievability

Reformat the table for the "FDA approved treatment options" so that the information is easily understood. Avoid recording too much statistical information in blocks of text. Use tables for comparative information. Use figures and graphics to present information from previous studies and tests with updated data. Use colour in graphics and tables for easier knowledge retention.

Conclusion

The main priority in this conversion project is to organize the content and data in a manner that gives users easy access online. Reformat the organizational structure of the document to provide more white space and scan-ability. The audience for this fact sheet is primarily health care professionals. Present key information in graphics for better data retrievability. Focus on creating distinction between the different components in the document (titles, texts, graphics, and other design elements) by using CRAP design principles.

Original factsheet is attached below.

CDC
CENTERS FOR DISEASE CONTROL AND PREVENTION

Helicobacter pylori

Fact Sheet for Health Care Providers

Updated: July 1998

What is *H. pylori*?

Helicobacter pylori (*H. pylori*) is a spiral-shaped bacterium that is found in the gastric mucous layer or adherent to the epithelial lining of the stomach. *H. pylori* causes more than 90% of duodenal ulcers and up to 80% of gastric ulcers.

Before 1982, when this bacterium was discovered, spicy food, acid, stress, and lifestyle were considered the major causes of ulcers. The majority of patients were given long-term medications, such as H_2 blockers, and more recently, proton pump inhibitors, without a chance for permanent cure. These medications relieve ulcer-related symptoms, heal gastric mucosal inflammation, and may heal the ulcer, but they do NOT treat the infection. When acid suppression is removed, the majority of ulcers, particularly those caused by *H. pylori*, recur. Since we now know that most ulcers are caused by *H. pylori*, appropriate antibiotic regimens can successfully eradicate the infection in most patients, with complete resolution of mucosal inflammation and a minimal chance for recurrence of ulcers.

How common is *H. pylori* infection?

Approximately two-thirds of the world's population is infected with *H. pylori*. In the United States, *H. pylori* is more prevalent among older adults, African Americans, Hispanics, and lower socioeconomic groups.

What illnesses does *H. pylori* cause?

Most persons who are infected with *H. pylori* never suffer any symptoms related to the infection; however, *H. pylori* causes chronic active, chronic persistent, and atrophic gastritis in adults and children. Infection with *H. pylori* also causes duodenal and gastric ulcers.

Infected persons have a 2- to 6-fold increased risk of developing gastric cancer and mucosal-associated-lymphoid-type (MALT) lymphoma compared with their uninfected counterparts. The role of *H. pylori* in non-ulcer dyspepsia remains unclear.

What are the symptoms of ulcers?

Approximately 25 million Americans suffer from peptic ulcer disease at some point in their lifetime. Each year there are 500,000 to 850,000 new cases of peptic ulcer disease and more than one million ulcer-related hospitalizations.

The most common ulcer symptom is gnawing or burning pain in the epigastrium. This pain typically occurs when the stomach is empty, between meals and in the early morning hours, but it can also occur at other times. It may last from minutes to hours and may be relieved by eating or by taking antacids.

Less common ulcer symptoms include nausea, vomiting, and loss of appetite. Bleeding can also occur; prolonged bleeding may cause anemia

leading to weakness and fatigue. If bleeding is heavy, hematemesis, hematochezia, or melena may occur.

Who should be tested and treated for *H. pylori*?

Persons with active gastric or duodenal ulcers or documented history of ulcers should be tested for *H. pylori*, and if found to be infected, they should be treated. To date, there has been no conclusive evidence that treatment of *H. pylori* infection in patients with non-ulcer dyspepsia is warranted.

Testing for and treatment of *H. pylori* infection are recommended following resection of early gastric cancer and for low-grade gastric MALT lymphoma. Retesting after treatment may be prudent for patients with bleeding or otherwise complicated peptic ulcer disease.

Treatment recommendations for children have not been formulated. Pediatric patients who require extensive diagnostic work-ups for abdominal symptoms should be evaluated by a specialist.

How is *H. pylori* infection diagnosed?

Several methods may be used to diagnose *H. pylori* infection. Serological tests that measure specific *H. pylori* IgG antibodies can determine if a person has been infected. The sensitivity and specificity of these assays range from 80% to 95% depending upon the assay used.

Another diagnostic method is the breath test. In this test, the patient is given either ^{13}C- or ^{14}C-labeled urea to drink. *H. pylori* metabolizes the urea rapidly, and the labeled carbon is absorbed. This labeled carbon can then be measured as $^{13}CO_2$ or $^{14}CO_2$ in the patient's expired breath to determine whether *H. pylori* is present. The sensitivity and specificity of the breath test ranges from 94% to 98%.

Upper esophagogastroduodenal endoscopy is considered the reference method of diagnosis. During endoscopy, biopsy specimens of the stomach and duodenum are obtained and the diagnosis of *H. pylori* can be made by several methods:

- The biopsy urease test - a colorimetric test based on the ability of *H. pylori* to produce urease; it provides rapid testing at the time of biopsy.
- Histologic identification of organisms - considered the gold standard of diagnostic tests.
- Culture of biopsy specimens for *H. pylori*, which requires an experienced laboratory and is necessary when antimicrobial susceptibility testing is desired.

What are the treatment regimens used for *H. pylori* eradication?

Therapy for *H. pylori* infection consists of 10 days to 2 weeks of one or two effective antibiotics, such as amoxicillin, tetracycline (not to be used for children <12 yrs.), metronidazole, or clarithromycin, plus either ranitidine bismuth citrate, bismuth subsalicylate, or a proton pump inhibitor. Acid suppression by the H_2 blocker or proton pump inhibitor in conjunction with the antibiotics helps alleviate ulcer-related symptoms (i.e., abdominal pain, nausea), helps heal gastric mucosal inflammation, and may enhance efficacy of the antibiotics against *H. pylori* at the gastric mucosal surface.

Currently, eight *H. pylori* treatment regimens are approved by the Food and Drug Administration (FDA) (Table 1); however, several other combinations have been used successfully. Antibiotic resistance and patient noncompliance are the two major reasons for treatment failure. Eradication rates of the eight FDA-approved

regimens range from 61% to 94% depending on the regimen used. Overall, triple therapy regimens have shown better eradication rates than dual therapy. Longer length of treatment (14 days versus 10 days) results in better eradication rates.

Are there any long-term consequences of *H. pylori* infection?

Recent studies have shown an association between long-term infection with *H. pylori* and the development of gastric cancer. Gastric cancer is the second most common cancer worldwide; it is most common in countries such as Colombia and China, where *H. pylori* infects over half the population in early childhood. In the United States, where *H. pylori* is less common in young people, gastric cancer rates have decreased since the 1930s.

How do people get infected with *H. pylori*?

It is not known how *H. pylori* is transmitted or why some patients become symptomatic while others do not. The bacteria are most likely spread from person to person through fecal-oral or oral-oral routes. Possible environmental reservoirs include contaminated water sources. Iatrogenic spread through contaminated endoscopes has been documented but can be prevented by proper cleaning of equipment.

What can people do to prevent *H. pylori* infection?

Since the source of *H. pylori* is not yet known, recommendations for avoiding infection have not been made. In general, it is always wise for persons to wash hands thoroughly, to eat food that has been properly prepared, and to drink water from a safe, clean source.

Table 1. FDA-approved treatment options (as of July 98)

Omeprazole 40 mg QD + clarithromycin 500 mg TID x 2 wks, then omeprazole 20 mg QD x 2 wks

-OR-

Ranitidine bismuth citrate (RBC) 400 mg BID + clarithromycin 500 mg TID x 2 wks, then RBC 400 mg BID x 2 wks

-OR-

Bismuth subsalicylate (Pepto Bismol®) 525 mg QID + metronidazole 250 mg QID + tetracycline 500 mg QID* x 2 wks + H_2 receptor antagonist therapy as directed x 4 wks

-OR-

Lansoprazole 30 mg BID + amoxicillin 1 g BID + clarithromycin 500 mg TID x 10 days

-OR-

Lansoprazole 30 mg TID + amoxicillin 1 g TID x 2 wks**

-OR-

Rantidine bismuth citrate 400 mg BID + clarithromycin 500 mg BID x 2 wks, then RBC 400 mg BID x 2 wks

-OR-

Omeprazole 20 mg BID + clarithromycin 500 mg BID + amoxicillin 1 g BID x 10 days

-OR-

Lansoprazole 30 mg BID + clarithromycin 500 mg BID + amoxicillin 1 g BID x 10 days

**Although not FDA approved, amoxicillin has been substituted for tetracycline for patients for whom tetracycline is not recommended.*

***This dual therapy regimen has restrictive labeling. It is indicated for patients who are either allergic or intolerant to clarithromycin or for infections with known or suspected resistance to clarithromycin.*

What is the Centers for Disease

Control and Prevention (CDC) doing to prevent *H. pylori* infection?

CDC, with partners in other government agencies, academic institutions, and industry, is conducting a national education campaign to inform health care providers and consumers of the link between *H. pylori* and stomach and duodenal ulcers. CDC is also working with partners to study routes of transmission and possible prevention measures, and to establish an antimicrobial resistance surveillance system to monitor the changes in resistance among *H. pylori* strains in the United States.

How can I get more information about *H. pylori*?

1. NIH Consensus Development Conference. *Helicobacter pylori* in peptic ulcer disease. JAMA 272:65-69, 1994.

2. Soll, AH. Medical treatment of peptic ulcer disease. Practice guidelines. [Review] JAMA 275:622-629, 1996. [published erratum appears in JAMA 1996 May 1;275:1314].

3. Hunt, RH. *Helicobacter pylori* from theory to practice. Proceedings of a symposium. Am J Med 1996; 100 (5A) supplement.

4. The American Gastroenterological Association, American Digestive Health Foundation, 7910 Woodmont Avenue, 7th floor, Bethesda, MD 20814, (301) 654-2055 telephone, (301) 654-5920 fax.

5. The National Digestive Diseases Information Clearinghouse, National Institute of Diabetes and Digestive and Kidney Diseases, National Institutes of Health,2 Information Way, Bethesda, MD 20892-3570, (301) 654-3810 telephone.

6. Hunt RH, Thompson ABR. Canadian *Helicobacter pylori* Consensus Conference. Can J. Gastroenterol 1998, 12(1):31-41.

7. European *Helicobacter pylori* Study Group. Current European concepts in the management of *H. pylori* information. The Maastricht Consensus. Gut 1997; 41, 8-13.

For further information, contact:

Health Communications Activity
Division of Bacterial and Mycotic Diseases
National Center for Infectious Diseases
Centers for Disease Control and Prevention
1600 Clifton Road, MS C09
Atlanta, GA 30333

CDC also has established an *H. pylori* web site and information line for health care providers and patients. The Internet address is www.cdc.gov/ncidod/dbmd/hpylori.htm
The toll free number is
1-888-MY ULCER
(1-888-698-5237)