

Efficient and practical dissemination of information on viral hepatitis in Japan: an effort by the Hepatitis Information Center, National Center for Global Health and Medicine

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Abstract: One of the important missions of the Hepatitis Information Center is to disseminate information regarding liver disease. The Hepatitis Information Center, National Center for Global Health and Medicine (NCGM) has been endeavoring to ensure that reliable and up-to-date information on liver disease is accessible to all people, regardless of age, disability, and background. Described here are several initiatives with regard to the dissemination of information about liver disease including: *i*) Education tool for youth, *ii*) Conversion of materials on liver diseases into audio format for the visually impaired, and *iii*) Hepatic Disease Medical Navigation System (Hepatic Navi). Hepatic Navi is a web-based search tool that informs users of the location and other information concerning medical centers where people can be tested for the hepatitis virus for free or at reduced cost. Hepatic Navi consolidates data from 47 prefectures into one database. The system depicts data *via* an interface that can be accessed anywhere with a PC, tablet, smart phone, or mobile phone. As a result, it has become possible for anyone from anywhere to access information on hepatitis virus testing. By using Hepatic Navi, it is anticipated that general people in need feel free to access to the testing and further treatment for virus hepatitis.

Keywords: Education for youth, visual impairment, Hepatic Disease Medical Navigation System (Hepatic Navi)

Introduction

If viral hepatitis is left untreated, it may progress to serious conditions such as cirrhosis and liver cancer. There are an estimated 3.0-3.7 million patients infected with the hepatitis B and/or C virus in 2000, making it one of the most common infectious diseases in Japan (1). The Hepatitis Information Center, National Center for Global Health and Medicine (NCGM) was established in 2008, and it has implemented various initiatives involving comprehensive measures to combat hepatitis (2). In specific terms, the Center's mission includes: *i*) provision of current information *via* the Internet and other media, including medical guidelines for liver disease and domestic and foreign information about hepatitis management; *ii*) provision of support for information-sharing among regional core centers, whereby the Center plays an administrative role in a committee composed of regional core centers; and *iii*) training and education for medical personnel.

Described here are the recent achievements of the Hepatitis Information Center regarding dissemination of information on hepatitis including: *i*) Education tool for youth, *ii*) Conversion of materials on liver diseases into audio format for the visually impaired, and *iii*)

Hepatic Disease Medical Navigation System (Hepatic Navi).

Education tool for youth

This tool named "Basic knowledge of hepatitis for young people" is information dissemination mainly for young people using an educational approach (3). The purposes of the program are to inform young people (mainly junior high school students) about hepatitis, to prevent hepatitis virus infection, and to eliminate prejudice and discrimination against the infection and patients. The program involves learning by considering seven problems. These tasks can be done both in an educational setting and also at home with a parent. This web tool was created based on the outcomes of the Policy Research for Hepatitis Measures in fiscal year 2012 to 2013 (Principal Investigator: Dr. Kato, Keio University) and was posted on the website of the Hepatitis Information Center in February 2018. The tool is expected to help raise awareness, increase knowledge, and promote respect for human rights.

Conversion of materials on liver diseases into audio format for the visually impaired

This initiative is part of the efforts of the Hepatitis Information Center to provide information to people with disabilities, such as visual impairment (4). The "Act for Eliminating Discrimination against Persons with Disabilities" seeks to eliminate discrimination on the grounds of disability in order to create a society where all citizens respect each other. Enacted in June 2013, the law stipulates that public institutions (such as government agencies) and companies are obligated to provide "reasonable accommodations" to people with disabilities. At the Hepatitis Information Center, efforts were made in collaboration with other organizations to ensure information on liver disease is accessible to the visually impaired. Specific materials are provided on the Hepatitis Information Center website for the visually impaired. This website was originally created by a research group funded by a Grant-in-Aid for Scientific Research (B; Principal Investigator: Dr. Yamaki, National Cancer Center Japan).

The following materials are provided in audio format for the visually impaired:

(i) Disease information (acute hepatitis, hepatitis B, hepatitis C, nonalcoholic fatty liver disease, alcohol-related liver disease, cirrhosis, liver cancer, and other liver diseases);

(ii) Illness and treatment counseling (information on counseling centers for liver disease at regional core centers for treatment of liver disease);

(iii) Information on reducing the cost of medical treatment (hepatitis treatment medical cost subsidy system);

(iv) Benefits for people infected through specific causes (benefits for patients with hepatitis B or hepatitis C);

(v) Guidelines to preventing the spread of viral hepatitis in daily life (5);

(vi) Information about mother-to-infant transmission of the hepatitis B virus (6);

(vii) Education tool for youth (as described above).

Hepatic Disease Medical Navigation System (Hepatic Navi)

In Japan, the cost of testing for the hepatitis virus has been fully or partially subsidized by national and local governments since 2008. From July 9, 2018, the Hepatitis Information Center provides a new web-based search tool which aids people to find approximately 30,000 medical institutions (regional core centers, specialized institutions, public health centers and contracted medical institutions) where they take government-supported virus hepatitis testing (7). For the establishment of Hepatic Navi, in cooperation with the Ministry of Health, Labor and Welfare, local government provided information of such institutions. Since November 29, 2018, it also became possible to search by Hepatic Navi for medical institutions that

can support liver cancer and severe cirrhosis patients enforced by the Ministry of Health, Labor and Welfare. Hepatic Navi prioritizes security measures, such as performing a penetration test before publication, adopting SSL encryption for all communications, and a propriety analysis of visitor access. Cesium is used as the map engine (8). The map engine was developed by the laboratory of Dr. Hidenori Watanabe at the University of Tokyo.

Some important aspects of this system are the following:

(i) Format creation: Contains data related to medical institutions for hepatitis testing in each prefecture. All such data have been compiled into one database in Japan for the first time;

(ii) Visualization of data: In the form of map data, information related to medical institutions for hepatitis testing and general information on liver disease is accessible to all people at all times *via* a personal computer, tablet, smart phone, or mobile phone of any model;

(iii) Data linkage: Linkage of data are executed using map information from the Geospatial Information Authority of Japan. This includes measures that take into consideration the effective use of domestic resources;

(iv) Raising awareness: Information can be transmitted to citizens directly, and at the same time, useful information can be provided to doctors, nurses, social workers, local governments, etc. throughout the country.

As of December 2018, the number of visitors to Hepatic Navi has been increasing and reached to 630,948/month (Figure 1).

Discussion

Since 2016, the Hepatitis Information Center has been conducting awareness-raising activities including

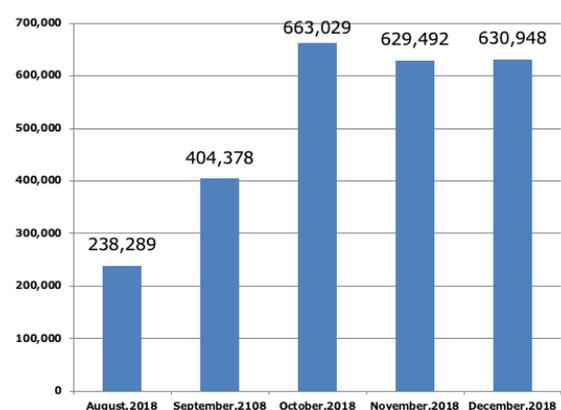


Figure 1. The number of visitors per month to the webpage of Hepatic Disease Medical Navigation System (Hepatic Navi).

for young people and people with disabilities. This approach is based on the policy that all citizens should be able to access information regarding liver disease. In this article, we reported the recently developed resources include education tool for the youth, conversion of materials on liver diseases into audio format for the visually impaired, and Hepatic Navi.

In Japan, about 7.4% of the total population has physical disabilities (4,360,000 people), intellectual disabilities (1,082,000), or mental disorders (3,924,000) (9). Thus, accessibility of information needs to be ensured so that the elderly and people with disabilities are able to obtain necessary information, especially in countries such as Japan where the elderly population is rapidly growing.

Hepatic Navi has consolidated data from 47 prefectures into one database for the first time.

The system depicts data *via* an interface that can be accessed with a PC, tablet, smart phone, or mobile phone, allowing anyone to access information on facilities testing for the hepatitis virus from anywhere. This tool is expected to bring the progress in spreading the measures of hepatic disease throughout the country. As for the system management, because the information of all medical institutions listed was based on public information, the data handling is relatively less strict compared with that of personal information. In the future, it may become conceptually possible to input other resource data onto Hepatic Navi, which could potentially serve as a user-friendly information platform.

The Hepatitis Information Center has been making efforts to ensure that all citizens can obtain correct information on liver diseases. In addition to Hepatic Navi, a system needs to be developed and conditions need to be improved so that people can easily access information on liver disease and information on related medical and welfare services, regardless of their disability, age, or region.

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