

“ADMETY-Me,” Health Information System featuring Specified Health Check Compatibility in Support of Health Examinations for the Ageing Society

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Abstract

“Obligation of Specified Health Checks (also called the metabolism check) and Specified Health Guidance to Medical Insurers” is one of the medical budget reduction projects announced by the Japanese MHLW (Ministry of Health, Labour and Welfare). It has caused a significant impact on the health check industry of Japan.

Previously, medical institutions were allowed to decide freely on the contents of health checks and other services (via private practice at the expense of the examined). However, they are now forced to perform a standard health check-up as defined by the “Law Concerning the Securing of Medical Care for the Elderly” and to create a new general health information system to deal with it.

This paper is intended to introduce the latest package in the industry for dealing quickly with the current environment, in which health check organizations all over Japan are required to meet the new requirements. However, it is also expected that the contents and application methods of health checks will be revised periodically in the future.

Keywords

specified health check, specified health guidance, standard data format, XML
metabolic syndrome, metabolism check, latter-stage elderly healthcare system

1. Introduction

It was on Wednesday, February 15, 2006, that the MHLW (Ministry of Health, Labour and Welfare) held the first “Study meeting on the way the standard health check and health guidance should be applied.” About 2 years later in April 2008, the MHLW made it mandatory for all Japanese people aged from 40 to 74 to undergo a specified health check and to receive specified health guidance. This represents the governmental policy to emphasize prevention of disease in order to reduce the medical expenses that are growing every year. It is now mandatory for the insurers (the bodies that collect premiums and pay insurance for the health insurance operations) to perform health examinations (specified health check) and health guidance (specified health guidance) focusing on visceral adiposity (central fat accumulation) to contribute to the prevention of adult diseases.

The contents of health checks has been specified by focusing on preventing adult diseases such as cancer, cerebral apoplexy and heart disease by introducing the notion of metabolic

syndrome into the judgment criteria, which is called “specified health check.” The adult diseases are called the lifestyle-related diseases in Japan. The name is based on the notion that affluent eating habits and environmental factors allow people to spend much of their time in their homes, which causes imbalanced diets and an accumulation of energy inside their bodies due to lack of exercise (insufficient metabolism) and that such routines eventually lead to the onset of disease.

Adult diseases cannot be prevented unless the life styles as described above are eliminated. However, such elimination requires considerable effort by the people concerned because it is not easy for them to give up their habitual overeating and other convenient habits.

In order to restore bodies into the shapes that they were originally in, it is important to provide information that encourages awareness (proper motivation) and lets people develop the will to improve themselves by themselves. Therefore, it has been decided that the specific health check should be accompanied with specific health guidance based on the check-up results, which can be regarded as an awareness reform therapy for encouraging motivation.

When a person receiving a specified health check is recognized as an applicable person for specified health guidance, that person is requested to improve his or her own health by contributing the requisite time and expenditure, for example by participating in an improved guidance program for six months at longest and submitting periodical reports by phone, mailing or fax as well as by participating in group education projects in support of motivation enhancement. As there is no other advanced country in the world taking care of the health of its people in such way, the new law is regarded to be significant by providing support for individuals in maintaining their own health, regardless of the purpose of the enactment.

2. Objectives of the System

At NEC, we decided to radically change our perspective when we started to plan the development of the foundation of a health check system as required by the law. Previously, we had been forced to customize the operations of each of the medical institutions conducting their own private practices (hospitals, health check centers and local authority institutions). Therefore, we designed our health information systems as well as the database with easily customizable structures so that we could provide a system to match the operations of each customer.

However, the specified health check system has an implicit theme of enhanced human awareness and contains many uncertainty factors that cannot be judged without actual practical experience. As a result, expectations and interest among customers have been aroused with regard to a package that to a certain degree standardizes operations.

It is also defined that the law itself was started in the knowledge that it would be modified periodically after enforcement, if for example a review was considered to be necessary. Although the content of the next review is not yet defined, it is not hard to imagine that a customized type package would be inefficient and troublesome because new customizations may be needed every time the law is reviewed and revised.

Therefore, in developing the new general health information system “ADMETY-Me,” our first target has been set to develop under the concept of a system to support linkages to other packages, “to build sophisticated functions so that they might be used by as many users as possible without the need for customizations.”

One of the issues represented by this concept may be seen in the health check results data output function.

Previous systems contained a very large number of components. With ADMETY-Me, we reviewed our experience with these systems and decided to enhance the output program by using shared components and we have succeeded thus in implementing a highly functional system.

What is important here is that settings other than the standardized functions are basically not able to be customized. This concept might be regarded at a glance as an unsatisfactory package for a system integrator, but it is actually quite important to break the fixed notion of customers about how the

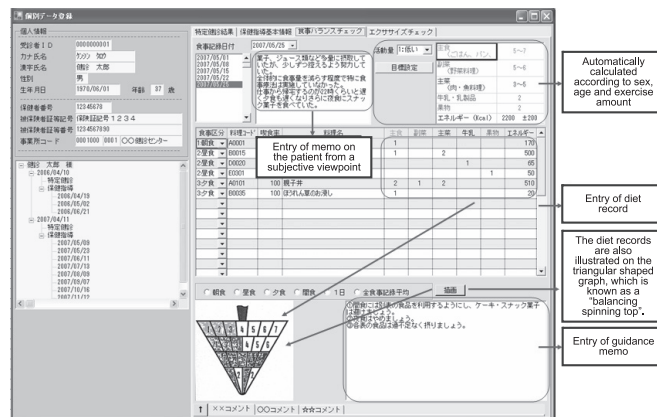


Fig. 1 Display sample.

特定保健指導支援計画及び実施報告書

1 保健指導対象者名 利用番号 2 保健指導者名 保健指導番号

姓 名 支 部 種 別

3 保健指導計画名(番号)・保健指導責任者名 保健指導責任者名(職種)

総称保健指導計画名 保健指導計画番号

4 実施レベル

助産付支援 継続的支援

5 保健指導コース名

6 継続的支援期間

支 援 期 間 予 定 開始年月日 平成20年 7月 9日 終了年月日

7 初回指導による支援の支援形態・実施する者の職種

支 援 形 態 指導・グループ 実施する者の職種

8 継続的な支援の支援形態・ポイント

支 援 形 態	数	ポイント
個別 A	()	(P)
個別 B	()	(P)
グループ	()	(P)
電話 A	()	(P)
電話 B	()	(P)
e-mail A	()	(P) ポイント
e-mail B	()	(P)
合 計	()	(P)

9 実施体制表 (委託事業等)

機関 A	機関 B	グループ	機関 A	機関 B	e-mail A	e-mail B
A 社						
B 社						
C 社						
D 社						

10 継続的な支援の支援形態・ポイント

11 6ヶ月後の評価

実施年月日	支 援 形 態	実施する者の職種	計 画	実 施

1.1 行動目標・行動計画

設 定 日 時	行 動 目 標	行 動 計 画	実 施 理 由

Fig. 2 Form sample.

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package should be applied.

By persuading a customer that “Some functions are not available but even after the next revision 6 months on, the functions that are then set may be used simply by upgrading the system version,” awareness will be aroused and the belief that “This is how the system should be and let us act so” will then influence them to think about new solutions that they have never thought of before.

“ADMETY-Me” is a system by which both customers and the engineers can challenge new solutions (Fig. 1 and Fig. 2).

3. Functions and Applications Development Environment of General Health Information System

3.1 Function Outline

The functions of the system are as outlined below.

- Reservation
- Reception
- Data collection
- Judgment support
- Result table compilation
- Billing
- Government-managed insurance claim - * Optional
- Totaling/statistics
- Specified health check function - * Partially optional
- *Ex post facto* guidance and interview support - * Optional
- Hospital medical record linkage
- Web result referencing - * Optional

3.2 Applications Development Environment

The following environment is available for the development of applications.

(1) Platform

1) Server: Windows 2003 Server

- Express 5800 100 Series
- HDD 160GB × 3 (RAID5 configuration), memory 1GB

2) Client: Windows XP Professional

- NEC MATE NX series
- Pentium4 2GHz or more, memory 1GB
- .NET Framework 1.1
- Development language: Microsoft .NET C#

3) Database

- Oracle Database 10g

(2) Software

- Database tool: True DB Grid
- Display configuration tool: InputMan for Windows Forms
- Forms compilation tool: CrystalReports, CO-REPORTS

4. Products of Specified Health Check

The specified health check not only defines the content, billing system and judgment criteria for the health check, but another of its important definitions is the electronic standard format (XML data output).

We defined both the specified health check result data specifications and the financial settlement data in the electronic standard format. This enabled the standardization of their item definitions. At some point, we will define the system so that insurers may store the health check data for many years and utilize it effectively as the individual data of checked persons. This means that, even when a person changes jobs and therefore an insurer, his or her data may be conveniently transferred between insurers. In order to make this possible, it is necessary that managers of data use a unified data interface. It was therefore decided to use the standard electronic format for transmission of data on checked persons.

It is only recently that the XML specification has started to manifest its power as a data interface and to take root in industry. It is the development based on the latest platform that has allowed us to easily challenge this latest technology. In the future, further “.NET” implementations may be required in order to support systems that may result from later expansion.

Web Service

This paragraph deals with the web service, which is part of the software structure mentioned in the above.

With the web service, the server program takes over the data exchange with the database responsibility depending exclusively on instructions from clients. This arrangement eliminates the need to install a database utility and driver for each client, improves the compatibility of software and also makes it possible to simplify the applications structures of clients. However, care is required in strictly defining the categorization. Otherwise, the entire client module may have to be rebuilt due to modification of the server module. Fig. 3 shows the operational principles for using the web service.

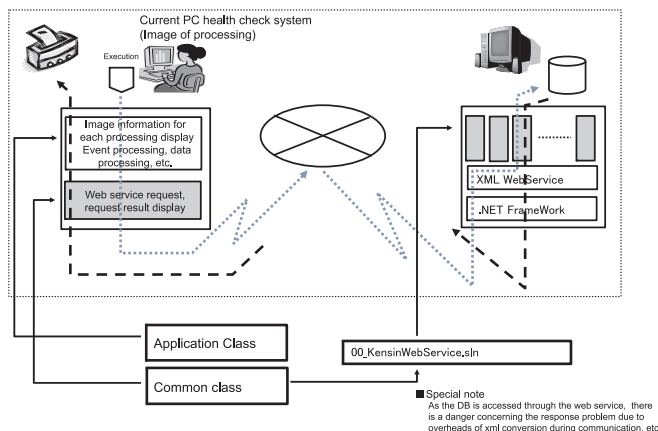


Fig. 3 Principles of operation using the web service.

5. Expansion of Scope and Establishment of Industry Standards

5.1 Partnership for Solutions Development

As the specified health check targets all of the health examination institutions in Japan, we recognize that whether or not it can be deployed widely will serve as a barometer of its capabilities. Based on this recognition, we have upgraded communications among the NEC-NET group companies, including the Ishikawa Computer Center that has provided important support for the current development and system release. We are thus able to advance collectively by collaborations both in development and in installation and deployment.

5.2 Policy on Industrial Standards

The content defined for the specified health check by the MHLW begins with a simple health check, while the medical examinations and adult disease checkups performed previously by health check institutions included much more detailed examinations.

However, this does not mean that detailed examinations are no longer applied. The MHLW mechanism permits them to be performed at the same time as a part of the specified health check and it is then considered that the specified health check has been performed. This is popularly called the “deemed health check.”

While the specified health check for the prevention of diseases is under the jurisdiction of the former Ministry of Health

and Welfare, the existing periodical health checks known as the “statutory health check” is under the jurisdiction of the former Ministry of Labor, and its content has been defined in order to protect the benefits of workers. Because of the existence of the two health check systems with different aims, a single health check based on common check items has never been defined by law in Japan. As a result, previous health systems had to deal with multiple health check systems by customizations or duplications of settings.

Moreover, it is a fact that these circumstances have led to system complications as well as to delaying the delivery term and increasing the costs. In order to judge which was the most important element, we deemed it necessary to apply a single industry standard to review the appropriate judgments made by individual organizations. In support of this policy we selected the “Guidelines for Judgments on Medical Examination Results and *ex post facto* Guidance” established by the Japan Hospital Association and the Japan Society of NINGEN DOCK (total medical checkup) providers. We hope that this industry standard can offer a means of freeing the health check organizations from the bonds of its complicated past.

6. Conclusion

“For the benefit of medical institutions and health check clients.”

The health check organizations need an effective system for health checks but they also need to survive in a medical industry that is currently under severe financial strain. We therefore think that there would be no future for the health check business without “an organization or health check system that is liked and selected by the clients.”

At the Health Check Sales Dept and Public Systems Division, NEC Nexsolutions, we share customer opinions among the entire corporate staff. This is achieved by eliminating the barriers between the sales and systems departments and by conducting our business with the idea that benefits for the customers are the same as the benefits and comforts of the health check clients.

The keywords representing the future of this business may be regional linkages and medical insurance payment request bills (Receipt Online project).

The regional linkages refers to the creation of a social system that expands the exchange of humans, articles and information so that different regions can enrich their lifestyles as a result of allotting roles amongst themselves by supplement-

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ing each others inadequacies. In future, the usage of the results of health checkups will be diversified, such as like being stored as online medical treatment information so that they may be shared with an emergency outpatient treatment department for quick and optimum medical care.

The health check market is the site of this new business that we are tackling and we consider that it has a bright future despite several remaining issues. We hope that, one day soon, we will have the opportunity to meet with our readers in a health check project. We would like to end this paper with the wish that such an occasion will be a happy encounter for both of us.

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