



Health Insurance  
Review & Assessment Service

1586-7 Seoh03-dong, seocho-gu Seoul 137-706, Korea <http://www.hira.or.kr>  
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## Part III IT & Other Activities

Electronic Billing (EDI) System	03
- Overview	
- Major Activities	
National Health Data Warehouse (DW) System	08
- Overview	
- DW Features	
Drug Utilization Review (DUR) System	14
- Overview	
- Major Activities	
- Future Plans	
Korea Pharmaceutical Information Service (KPIS)	18
- Overview	
- Major Activities	
- Expected Outcomes	



Health Insurance  
Review & Assessment Service

## Part III

## IT &amp; Other Activities



- Electronic Billing (EDI) System
- National Health Data Warehouse (DW) System
- Drug Utilization Review (DUR) System
- Korea Pharmaceutical Information Service (KPIS)

Electronic Billing (EDI) System  
 National Health Data Warehouse (DW) System  
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 Korea Pharmaceutical Information Service (KPIS)

## Electronic Billing (EDI) System

### Overview

This system was designed to help review the healthcare service claim details transmitted via the Electronic Data Interchange (EDI) or compact diskettes. As an integrated information system, it enables review by performing computer-aided inspections of healthcare service fees, drug prices and other essential claims-related information based on the given review guidelines and examples. It helped to reduce the administrative cost of handling healthcare service claim details, enhanced user convenience, and contributed to the improvement of public health through the generation and provision of comprehensive accurate health insurance information.

#### • Developmental History of the EDI System

- Jan. 1994 : Diskette-based claims introduced
- Oct. 1996 : EDI-based claims introduced
- Aug. 2001 : Web-based EDI introduced
- Dec. 2004 : All claims henceforth made by EDI.
- Jun. 2005 : International certificate (ISO 9001) obtained for healthcare service claim review systems
- Mar. 2006 : Consulting for building the EDI system provided to Japan
- Nov. 2006 : Won the first prize at the e-Business Competition held by the Ministry of Knowledge Economy

### Major Activities

#### ■ EDI Procedure

##### ① Healthcare service claim and details received

###### • EDI-based claim submission

The provider institutions and the Health Insurance Review and Assessment Service (HIRA) exchange standardized digital documents as healthcare service claims, details and notifications of review results using the computer network. Claim details that have

Electronic Billing (EDI) System  
National Health Data Warehouse (DWH) System  
Drug Utilization Review (DUR) System  
Korea Pharmaceutical Information Service (KPIS)

reached the relay center are received in real time and their review results are transmitted to the provider institution in the EDI data format.

#### • CD or diskette-based billing

The provider institutions deliver their healthcare service claims and details - saved on a digital medium - by courier or mail. Receipts are issued by e-mail or in writing.

#### • Paper-based claims

The provider institutions deliver their healthcare service claims and details output on paper (multiple bar code) by courier or mail. Receipts are issued by e-mail or in writing.

### ② Computerized inspection

Healthcare service claims and details are inspected by the computer system before the review. In so doing, various digital data are provided on screen as reference data during the review processes.

#### • Inspection of errors related to details

The healthcare service claims and details received from the provider institution are either returned or classified as unacceptable after checking against any omissions or mistakes with essential items.

#### • Inspection against criteria

Unit prices and total amounts of claim details are checked using the digital database of healthcare fees and drug prices.

#### • Expert inspection

Service fees or drug prices whose review criteria can be standardized [among items of claim details which have been checked against the criteria] are inspected using a computer program that interconnects multiple types of information.

### ③ Screen review

Claim details that have been inspected by computers are distributed among review personnel. The claims are checked for their acceptability under the relevant statutes, notices, or other criteria by comprehensively understanding the claim details and the provider institution's claim tendency. [Figure 1]

[Figure 1] Screen review

구분	코드	내역명	수량	단위	단가	총액	비고
1	100000	진료비	1	회	100000	100000	
2	100001	진료비	1	회	100000	100000	
3	100002	진료비	1	회	100000	100000	
4	100003	진료비	1	회	100000	100000	
5	100004	진료비	1	회	100000	100000	
6	100005	진료비	1	회	100000	100000	
7	100006	진료비	1	회	100000	100000	
8	100007	진료비	1	회	100000	100000	
9	100008	진료비	1	회	100000	100000	
10	100009	진료비	1	회	100000	100000	
11	100010	진료비	1	회	100000	100000	
12	100011	진료비	1	회	100000	100000	
13	100012	진료비	1	회	100000	100000	
14	100013	진료비	1	회	100000	100000	
15	100014	진료비	1	회	100000	100000	
16	100015	진료비	1	회	100000	100000	
17	100016	진료비	1	회	100000	100000	
18	100017	진료비	1	회	100000	100000	
19	100018	진료비	1	회	100000	100000	
20	100019	진료비	1	회	100000	100000	
21	100020	진료비	1	회	100000	100000	

### ④ Determination of payable amount and notification of review results

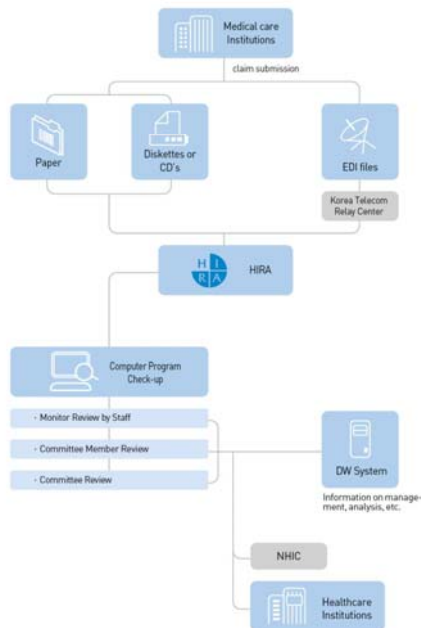
Reflecting the review outcome or adjustment details, the process either in the determination of the payable amount or a final decision to reject the claim details that have been reviewed. The National Health Insurance Corporation (NHIC) and the provider institution are notified about the payable amount and other review outcomes.

### ⑤ Appeals

Any appeals made by a provider institution that objects to the review results produced by HIRA are re-examined and the results are notified to the NHIC and the provider institution.

Electronic Billing (EDI) System  
 National Health Data Warehouse (DW) System  
 Drug Utilization Review (DUR) System  
 Korea Pharmaceutical Information Service (KIPS)

[Figure 2] Work flow of digital billing and review system



#### ■ Authentication of Claim Software

The purpose of the authentication is to improve the software and stabilize the provider institution claim system by removing clerical errors when the system or environment changes.

The claim software is inspected in two parts - its functions and data.

##### Claim Software Inspection and Review Committee

- When requested, the adequacy of the claim software is reviewed for its stability.
- Composition : Five experts from academia, five representatives from medical or pharmaceutical organizations, two from the Ministry of Health, Welfare and Family Affairs, and one representative each from the NHC and HIRA.

#### ■ Utilization of Electronic Claim Systems by Year

[Table 1] Status of provider institutions that filed electronic claims (as of Dec. 2008)

(Unit: %)			
Classification	Number of Providers	Number of Digital Billing Providers	Participating Ratio
2008	78,410	75,665	96.5

[Table 2] Review status of healthcare service claims (as of Dec. 2008)

(Unit: 1,000 cases, million won, %)				
	Classification	Total	Digital Billings	Ratio
2006	Number of cases	901,367	898,986	99.7
	Reimbursed Amount	24,984,616	24,810,527	99.3
2007	Number of cases	1,040,276	1,039,024	99.9
	Reimbursed Amount	28,017,616	27,939,855	99.7
2008	Number of cases	1,196,988	1,196,327	99.9
	Reimbursed Amount	29,949,323	29,922,095	99.9

## National Health Data Warehouse (DW) System

### Overview

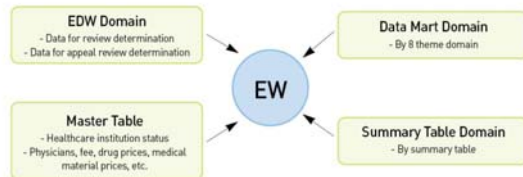
HIRA created a Data Warehouse (DW<sup>1</sup>) at its Headquarters in July 2003 in order to effectively manage digital information between the Headquarters and branch offices. This system enables the management of the nation's health information by integrating data from all healthcare services covered by the national health insurance. This data system has been used effectively to perform review and assessment services.

In particular, analysis of the data has provided diverse statistical information concerning public healthcare to the government, National Assembly, research institutes, universities, press and other related institutions. It has also helped to enhance the value of the public health data as a source for establishing, implementing and assessing public health policies, preventing diseases, and providing health education.

### DW Features

#### ■ DW system configuration

[Figure 3] DW system configuration



<sup>1</sup> Data Warehouse ("DW" hereinafter) refers to an enormous data repository that enables the integrated management of data accumulated in the databases of a system operated by HIRA. The data are converted into a uniform format through a series of processes such as data extractor, conversion, and refinement.

#### ① Enterprise Data Warehouse (EDW) Domain

EDW refers to an enterprise data collection that constitutes a base for Data Mart and Summary Tables. HIRA utilizes its EDW--which is built with its claims data submitted by healthcare service provider institutions--for developing various review and assessment indicators.

#### ② Data Mart Domain

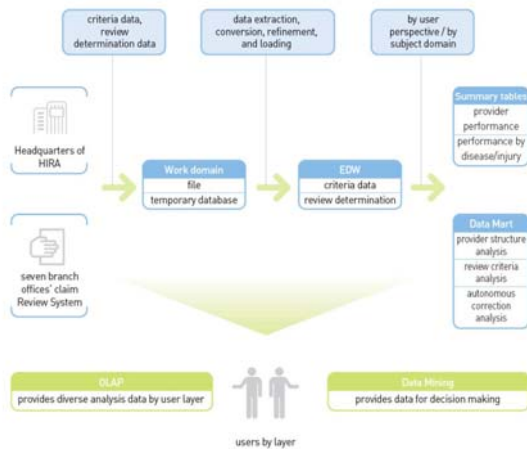
Data Mart, a part of the EDW system, may be viewed as a smaller data warehouse consisting of data that are valuable to specific users or targets. Data Mart is configured by subject domain considering the analysis of user requirements, user convenience and system performance. These data enable HIRA to conduct cost-effective analysis by organizing and providing detailed data by service categories such as review criteria, assessment of healthcare service adequacy, and comprehensive management system.

#### ③ Summary Table Domain

Summary tables consist of statistical data summed up by theme or subject with the goal of providing data to support decisions about the development or improvement of the service operations. In general, these summary tables are created when required according to the users' needs minimizing the expenses. HIRA utilizes data that is organized into healthcare service unit according to providers' performance by claim, claim amount range and service performance.

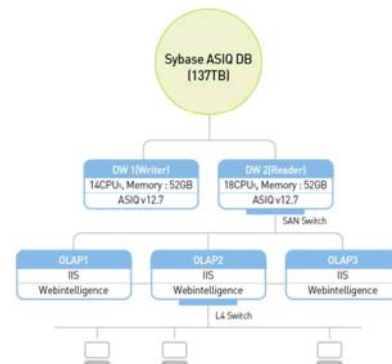
## ■ DW Data Deployment

[Figure 4] DW data deployment flow diagram



## ① Current status of DW system

[Figure 5] Sybase ASIQ Database



## ② Status of data deployed by year

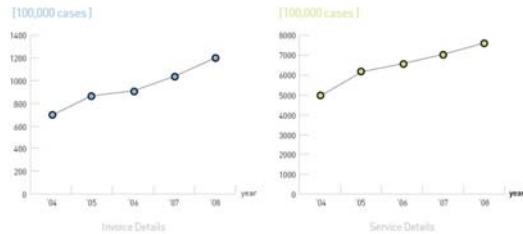
[Table 3] Current status of data

(Unit of Cases: million cases, %)

Classification	Total	'04	'05	'06	'07	'08	
Claim Details	Cases	4,673	686	850	901	1,036	1,200
	Growth rate	100	14.68	18.19	19.28	22.17	25.68
Service Details	Cases	32,298	4,923	6,195	6,589	7,046	7,545
	Growth rate	100	15.24	19.18	20.40	21.82	23.36

Electronic Billing (EDI) System  
 National Health Data Warehouse (DW) System  
 Drug Utilization Review (DUR) System  
 Korea Pharmaceutical Information Service (KPIS)

[Figure 6] Invoice and service details



#### ■ Utilization of the Data Warehouse System

- **Used for assessment and its information disclosure**

While storing and managing the claims data submitted by provider institutions, the DW System provides useful information for developing review techniques or performing assessment services by producing and analyzing diverse statistical data internally. The statistical data generated by the DW System are published to enhance the citizens' right to know. Some examples include topics such as "antibiotics prescription rates," "providers that prescribe fewer injections" and "providers that practice natural delivery more often."

- **Provide information for policy making**

Further, it supports the development of national health insurance policy by providing timely statistical data to the National Assembly and the government. It also provides health insurance statistical data to various other agencies, including the Korean Centers for Disease Control and Prevention.

- **Share information among relevant organizations**

In particular, DW enables active information sharing between the relevant organizations by integrating the information systems of the National Health Insurance Corporation. The DW also enhances the operational efficiency of information sharing among organizations that review special healthcare charges, such as the Korean Veterans Welfare & Healthcare Corporation.



## Drug Utilization Review (DUR) System

### Overview

The Drug Utilization Review (DUR) system<sup>2</sup> gives real-time information on drug safety--such as screening for contraindications or the use of prohibited drugs for children--to doctors and pharmacists, whose computers are linked to the HIRA's system. The system, which has been pilot tested since April 2008, is aimed at preventing the improper use of drugs and reducing the adverse events of drugs.

#### • Brief History

- 2004: The drug utilization evaluation system was introduced and the DUR was implemented with the purpose of post-factum management.
- April 2008: A real-time DUR system was applied to the stage of prescription and dispensing.
  - : Inspecting identical prescriptions within identical healthcare institutions.
- May 2009: A pilot test was launched to extend the real-time inspection of prescriptions.
  - : Inspection of prescriptions was extended to medical services between different healthcare institutions and different departments.

### Major Activities

#### ■ Inspection of Identical Prescriptions Issued by Identical Healthcare Institutions

##### • Target Institutions

- All medical institutions and pharmacies that request medical costs through the computer system (excluding Korean Oriental medicine services).

##### • Starting Date : April 2008

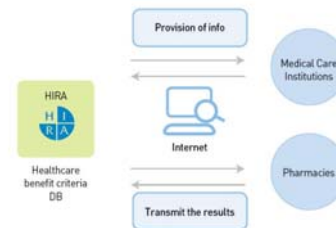
##### • Items for inspection

- Drugs prohibited for simultaneous use, drugs with age limitations, drugs prohibited to use by pregnant women and drugs no longer covered by insurance.

#### • Method

- DUR automatically updates the drug safety information necessary for prescribing and dispensing drugs, thus providing the information in real time.
- Warning pop-ups appear on the computer screen when healthcare institutions prescribe and dispense banned drugs.
- In the event when banned drugs have to be prescribed and dispensed, the reasons should be submitted to HIRA along with the explanation given to the patients.

[Figure 7] Inspection procedure of identical prescriptions



HIRA inspects the information on prescription and dispensing provided via the DUR at the stage of prescription and dispensing.

#### ■ Inspection of Prescriptions between Different Healthcare Institutions and the Medical Services of Different Departments : Pilot Project

##### • Purpose

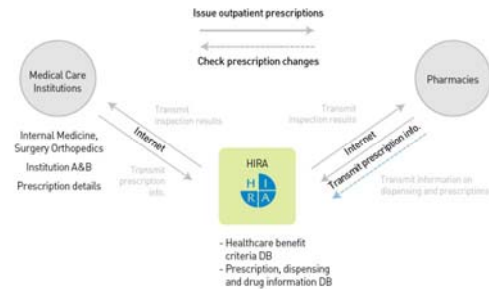
- The prior prescription cross-check system between different medical institutions and different diagnostic departments is being conducted on a pilot test basis before extending it to nationwide coverage.

<sup>2</sup> DUR (Drug Utilization Review) originally referred to the evaluation of drug usage details; however, in Korea, DUR refers to the system used to support the services of prescribing and dispensing drugs.



- **Target institutions**
  - All pharmacies and some medical institutions in Goyang City, Gyeonggi-do.  
: 330 pharmacies & 130 medical institutions [out of the total of 650 medical institutions]
- **Project Period : May 1 - October 31, 2009 (6 months)**
- **Items for inspection**
  - Drugs prohibited for simultaneous usage, drugs with age limitations, drugs prohibited to use by pregnant women, drugs no longer covered by insurance and duplicate prescriptions.
- **Method**
  - The possible dispensing and prescription of banned drugs and the duplicate administration of drugs by medical institutions are checked against the information provided by the HIRA.
  - Information pop-ups are provided for improper cases.
  - In the case of banned drugs, prescriptions should be changed or issued along with the explanation of the reasons.
  - If banned drugs are discovered at the time of dispensing, pharmacists should consult the doctors before proceeding.

[Figure 8] Procedure for the Pilot Inspection Program



### Future Plans

- Continue to supplement and expand the scope of the DUR inspection and the number of items liable to inspection
  - : Diseases for which the use of drugs is banned, dosages (maximum and minimum dosages), duplication of treatment group, etc.
- Expand the inspection system for different groups of prescriptions to nationwide coverage (by 2010)

Electronic Billing (EDI) System  
 National Health Data Warehouse (DWH) System  
 Drug Utilization Review (DUR) System  
 Korea Pharmaceutical Information Service (KPIS)

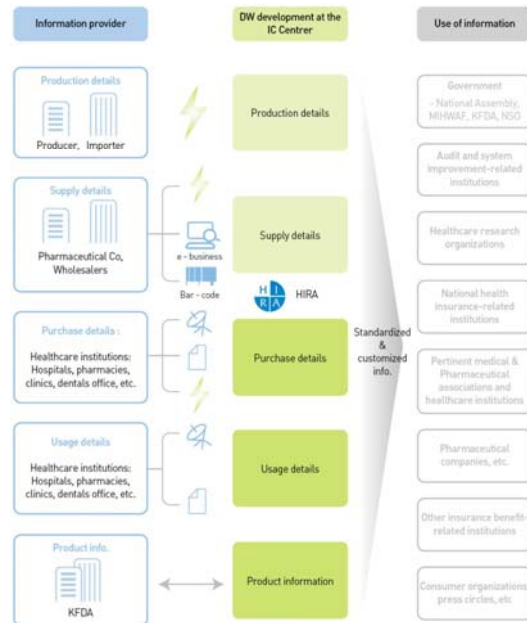
## Korea Pharmaceutical Information Service (KPIS)

### Overview

In accordance with the government's policy to effectively manage the distribution information, HIRA operates the Korea Pharmaceutical Information Service (KPIS). KPIS aims to gather and manage the distribution flow information [production → distribution → consumption] of drugs rapidly and accurately. The drug codes are standardized in an effort to advance the country's drug distribution system and to create a proper drug statistics system.



[Figure 9] Work flow of KPIS



Electronic Billing (EDI) System  
 National Health Data Warehouse (DWH) System  
 Drug Utilization Review (DUR) System  
 Korea Pharmaceutical Information Service (KPIS)

## Major Activities

### ■ Core Duties

- Collect, survey, process, use and provide the information on drug distribution flows
- Manage medicine bar codes, conduct research, educate, and disseminate the standardization of drug distribution flow information
- Create and operate databases containing information on drug distribution flows
- Support efforts to distribute information by developing and spreading programs aimed at submission of information on drug distribution
- Survey the status of medicine distribution and conduct research into advancing the distribution system
- Conduct other pertinent services when deemed necessary by the Minister for Health, Welfare and Family Affairs



### ■ Standardization of Drug Codes

The Korea Drug Code system is used to standardize the country's drug codes. The system is comprised of a drug distribution bar-code coding system and the EDI code system for claims with covered drug costs. The code consists of 13 digits, namely, the country identification code, the manufacturer's code, the production item code and the verification number, as follows. [Table 4]

[Table 4] Standard drug code configuration system

Digit(13)	3	4	5		1
Details	Country identification code	Manufacturer's code	Product item code		Verification number
			Product code including dosages	Packaging unit code	
Example	880	6400-6999	0000-9999	1-9	0-9

The standard drug codes by item and package unit are announced over the website of KPIS [www.kpis.or.kr]. Product information on 20 items--such as Korean product name, English product name, drug size, packaging information, and the number of units within a package--is input into specific databases and managed. [Table 5]

[Table 5] Standard drug code management overview (As of Dec. 31, 2008)

No. of pharmaceutical companies and importers	No. of drug items	No. of codes by package unit
477	43,480	106,861

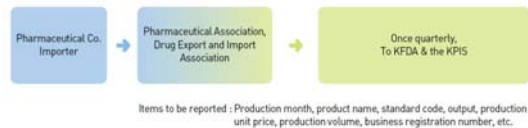
This coding system, which took effect in January 2008, is now used in reporting the results of drug production, importation and supply to the HIRA. The system will also be used in drug bar-code labeling from January 2009.

### ■ Collection and Management of Drug Distribution Information

#### • Management of the performance of drug production and imports

Drug manufacturers and importers report their quarterly production and import results to pharmaceutical and import/export associations, which in turn submit a comprehensive report of such details to KPIS at HIRA. [Figure 10]

[Figure 10] Reporting system for results of drug production and imports



#### • Drug supply details

Drug manufacturers, importers and wholesalers report the monthly results of their drug supply (to medical institutions, pharmacies, and wholesalers) to KPIS by the end of the subsequent month, [Figure 11]

[Figure 11] Reporting system for drug supply



- Create the national statistical infrastructure: The creation of the drug distribution and usage statistics system will be helpful in formulating of drug distribution policy. This will make it possible to implement an evidence-based policy and evaluation.
- Boost the transparency of drug distribution and rationalizing insurance finance: Accurate distribution of drug information will be used to enhance the transparency of drug distribution information, thus strengthening the competitiveness of the medical industry.
- Ensure safe use of drugs by the public: It will be feasible to manage and collect forged and altered drugs and to tackle drug safety problems.
- Enhance the management efficiency of pharmaceutical companies: It will be possible to provide a wide range of information about the drug market, thus making it possible to efficiently develop and produce drugs along with an effective management of drug stocks.

## Expected Outcomes

The drug distribution information and drug bar-code information provided by KPIS will be useful for various purposes.