National Congress by PERSI

Improving Healthcare Quality and Efficiency Toward UHC in Taiwan

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Outline

1 **Achievements of Taiwan's NHI**

2 **Improve quality and Efficiency of Health Care**

3 **Challenges and Perspectives**
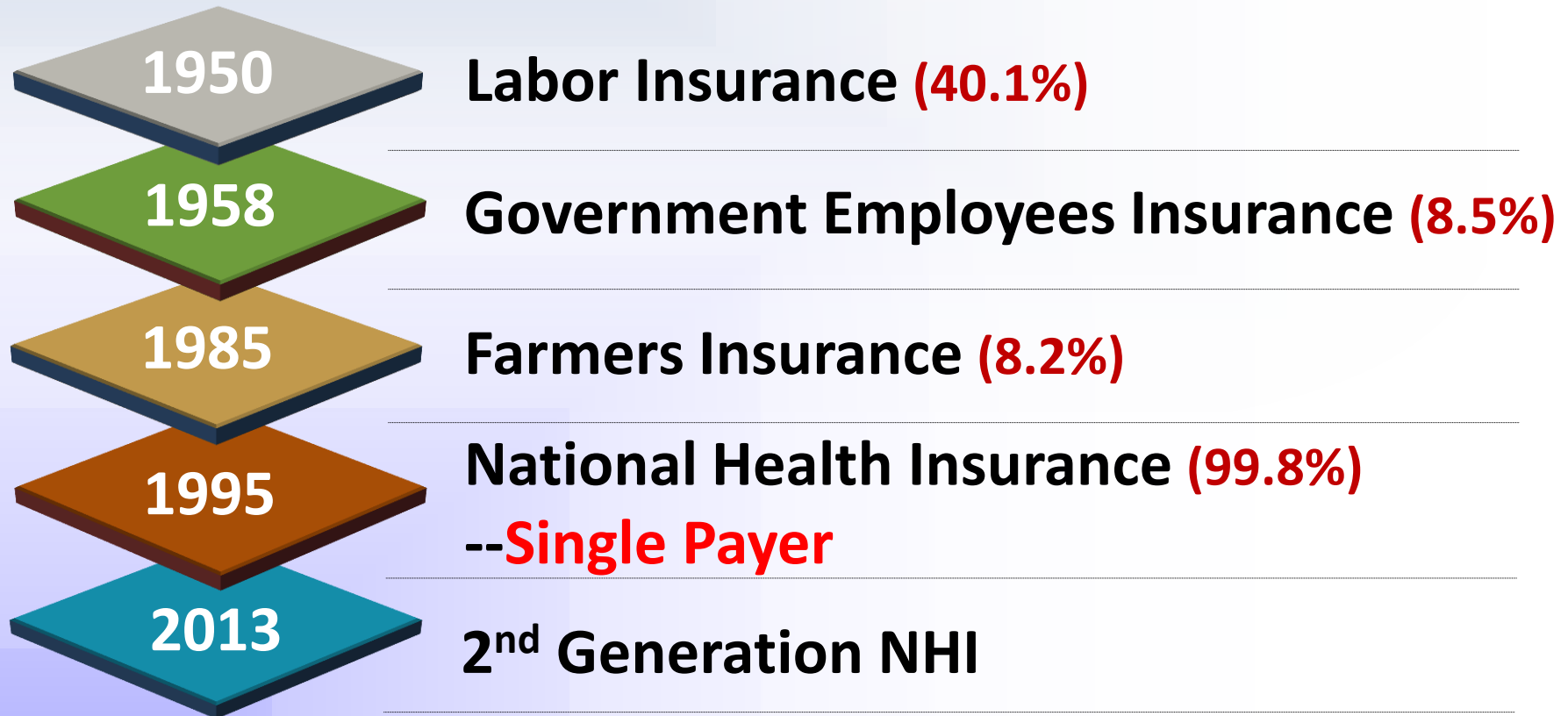
4 **Conclusion**

Profile of Taiwan

Population (2017)	23.57 million
Land area	36,197km^2
Ageing (over 65)	13.86%
GDP per capita (2017)	US$ 24,331 (nominal) US$ 49,800 (PPP by CIA)
Crude birth rate (2017) Crude death rate (2017)	8.23 ‰ 7.27‰
Infant mortality (2016) Maternal mortality (2016)	3.9 ‰ 11.6 0/0000
NHE to GDP (2016)	6.3%
Life expectancy(2016)	83.4 (F) / 76.8(M)

Achievements of Taiwan's NHI

UHC achieved by Incremental Steps

1950 — **Labor Insurance (40.1%)**

1958 — **Government Employees Insurance (8.5%)**

1985 — **Farmers Insurance (8.2%)**

1995 — **National Health Insurance (99.8%)**
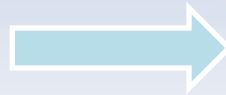**--Single Payer**

2013 — **2nd Generation NHI**

Only 59% of the population was covered by these insurance plans in 1994, most of the uninsured were the children and the elderly.

NHI Framework

Other revenues

1. Lottery revenues
2. Tobacco excise tax

NHIA

Premiums

NHI Cards

Claims

Payments

Copayments

Health Care

Insured

Healthcare Providers

NHI Characteristics

Coverage	Compulsory enrollment for all citizens and legal residents
Administration	Single-payer system run by the government
Financing	Premiums
Benefits	Uniform package, copayment required(11% of medical expenses)
Providers	Contract-based About 93% of healthcare providers contracted with NHI
Payment	Plural payment programs under the global budget payment systems
Privileges	Premium subsidies and copayment waivers for the disadvantaged

Benefits

Disease   **Injury**   **Maternity care**

- Inpatient care
- Outpatient care
- Prescription drugs
- Dental services (orthodontics, prothodontics excluded)
- Traditional Chinese medicine
- Day care for the mentally ill
- Home health care

Achievements of Taiwan's NHI

- NHE as the % of GDP is 6.34% (2016)
- Low Administrative Cost (0.8% of medical expenditures)

- Universal Health Coverage
- Comprehensive Benefit Package

- High Public Satisfaction
- Secured Foundation in Disasters

- Equal Access
- Affordable Cost
- Low Copayment (10% of medical expenditures)

Advantages of Single Payer System

Nationwide risk pooling
Uniformed benefit package and financing principles

Adopting global budget system to ensure financial sustainability

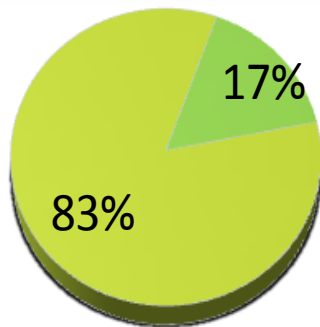Applying information technology to improve efficiency and quality

Ensuring an adequate supply of healthcare services

Efficient Healthcare System
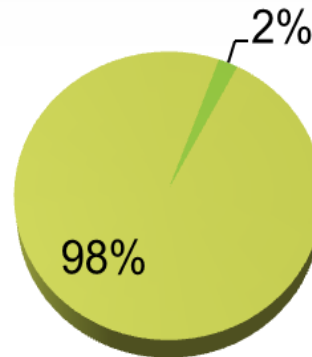
- Dominated by the private sector
- A closed-staff medical structure for hospitals
- No gate-keeper system
- High volume of hospital OPD services
- No waiting list as defined in western countries

Hospitals	Clinics	Beds

Hospitals
17%
83%

Clinics
2%
98%

Beds
29%
71%

Public   **Private**

Data:2017 NHIA Statistics, Taiwan

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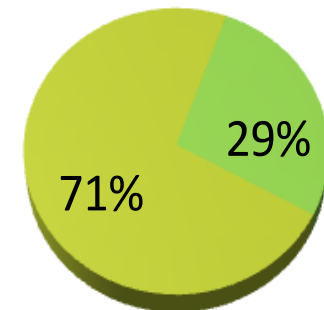
Alleviating Financial Burdens

Patients with catastrophic diseases represent 3.99% of population, who used 27.33% of NHI health expenditures.

Type of User	Medical Expenses (2017)	Equivalency
Per capita	US$941	1 .0
Per catastrophic disease	US$6,352	6.7
Per cancer patient	US$5,183	5.5
Per rare diseases patient	US$21,196	22.5
Per dialysis patient	US$18,979	20.2
Per patient on respirator	US$23,041	24.5
Per hemophilia patient	US$94,164	100.1

(1 USD = 30 NTD)

3 Dimensions to Consider When Moving Towards UHC – Taiwan's Status Quo

Low cost sharing (11% of medical expenses)

Population covered : 99.77%

Comprehensive benefit package
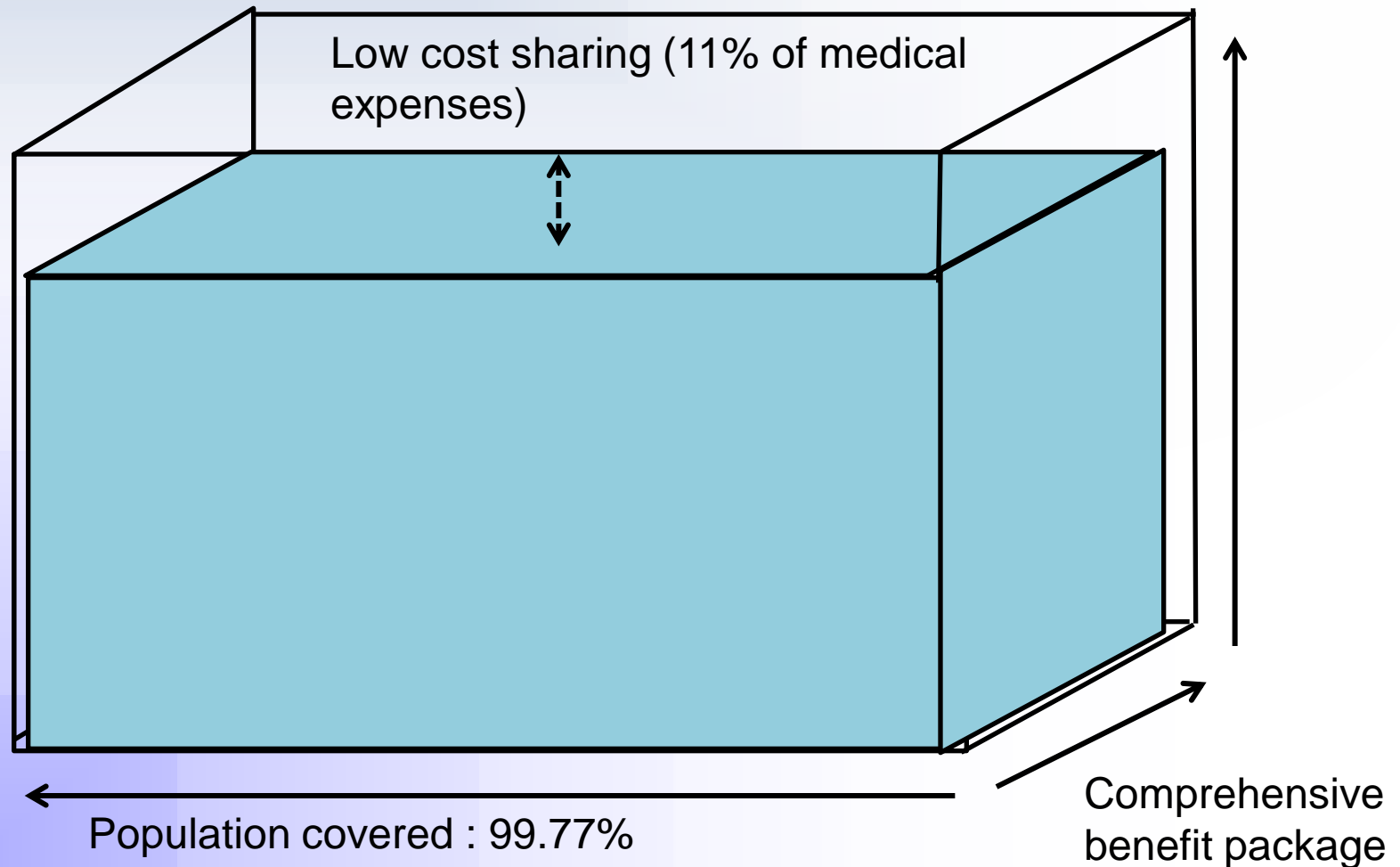
High Public Satisfaction

1995-2017

85.8

Premium & Copayment Adjusted

Second Generation NHI

Satisfied values: 39.0, 61.0, 65.4, 63.3, 63.8, 65.6, 78.5, 59.7, 70.9, 78.6, 72.3, 64.3, 77.5, 79.3, 82.9, 85.2, 80.4, 79.4, 73.9, 67.6, 78.6, 80.0, 79.8, 81.0, 83.1, 85.8

Dissatisfied values: 47.0, 27.0, 22.5, 25.9, 24.5, 20.1, 13.6, 29.6, 20.6, 11.6, 22.1, 34.1, 22.1, 15.9, 15.8, 13.4, 17.3, 15.7, 22.0, 28.1, 18.2, 19.4, 16.9, 14.1, 12.5, 11.3

Years: 1995, 1996, 1998, 1999, 2000, 2001, 2002(I), 2002(II), 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013/3, 2013/5, 2013/7, 2013/10, 2014, 2015, 2016, 2017
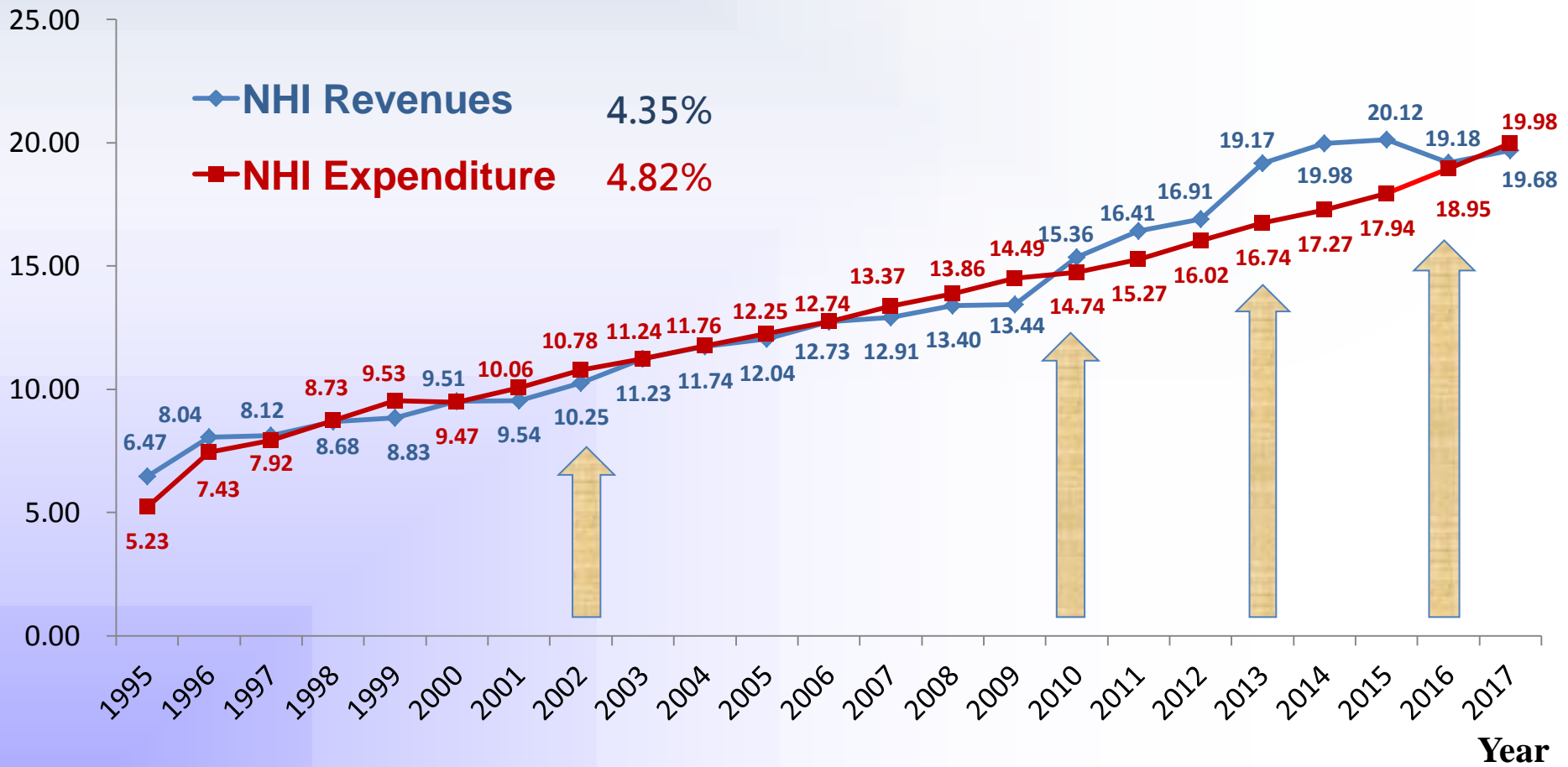
YEAR

◆ Satisfied ■ Dissatisfied

Trend of NHI Financial Status

Billion USD

Cumulative balance as of 2017: USD 7.96 billion

Average Annual Growth from 1995 to 2017

NHI Revenues — 4.35%

NHI Expenditure — 4.82%

Year	NHI Revenues	NHI Expenditure
1995	6.47	5.23
1996	8.04	7.43
1997	8.12	7.92
1998	8.68	8.73
1999	8.83	9.53
2000	9.51	9.47
2001	9.54	10.06
2002	10.25	10.78
2003	11.23	11.24
2004	11.74	11.76
2005	12.04	12.25
2006	12.73	12.74
2007	12.91	13.37
2008	13.40	13.86
2009	13.44	14.49
2010	15.36	14.74
2011	16.41	15.27
2012	16.91	16.02
2013	19.17	16.74
2014	19.98	17.27
2015	20.12	17.94
2016	19.18	18.95
2017	19.68	19.98

Improve Quality and Efficiency of Health Care

NHI Cards

Daily update of medical visit data

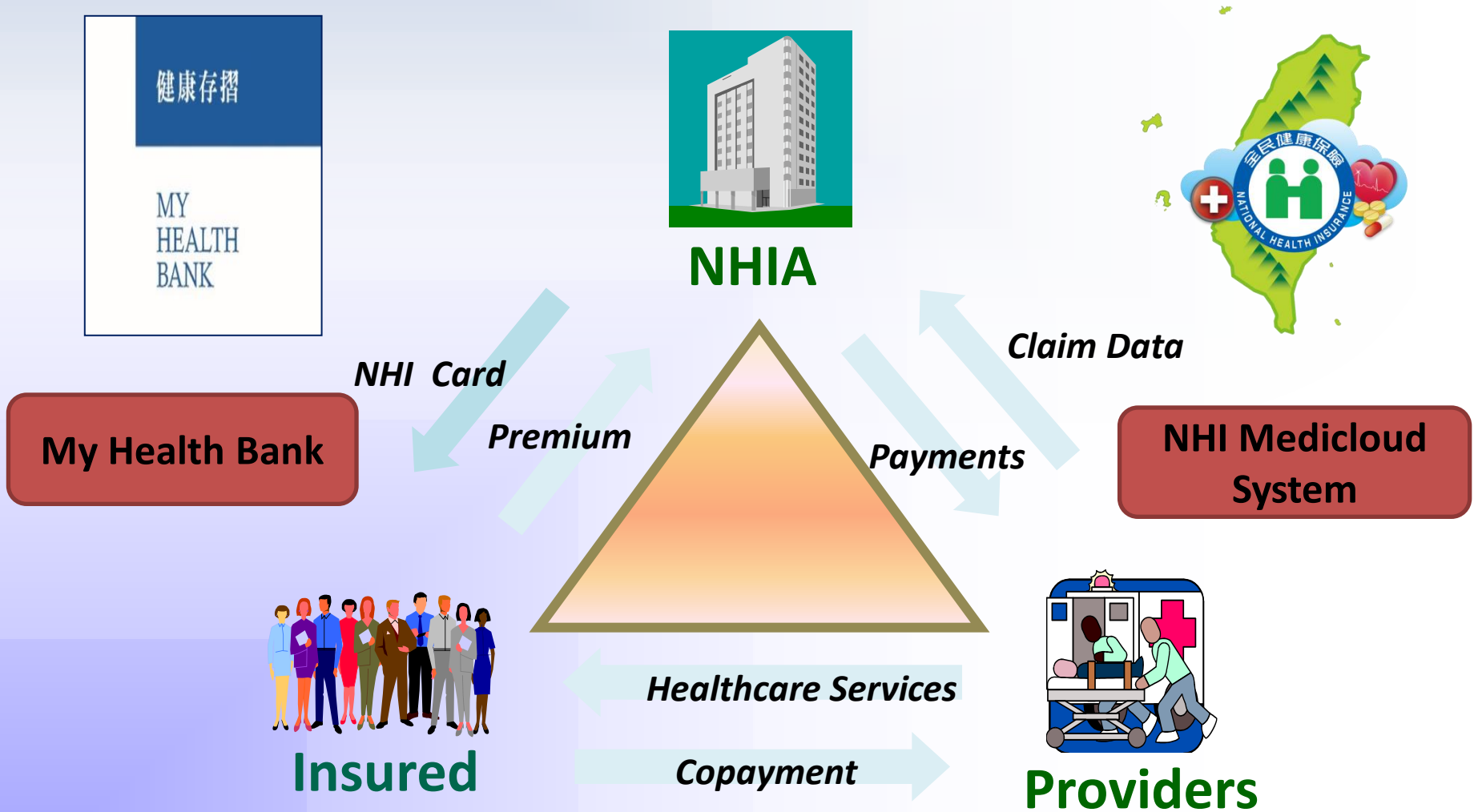**Heavy-user detection & management**

Infectious disease tracing & monitoring

Simplification of management process

1. Last Six Medical Visits
2. Drug Prescriptions, Drug Allergies
3. Catastrophic Diseases
4. Organ Donation Consent
5. Palliative Care

Applications of Health Information

NHIA

My Health Bank

NHI Multicloud System

NHI Card

Premium

Claim Data

Payments

Insured

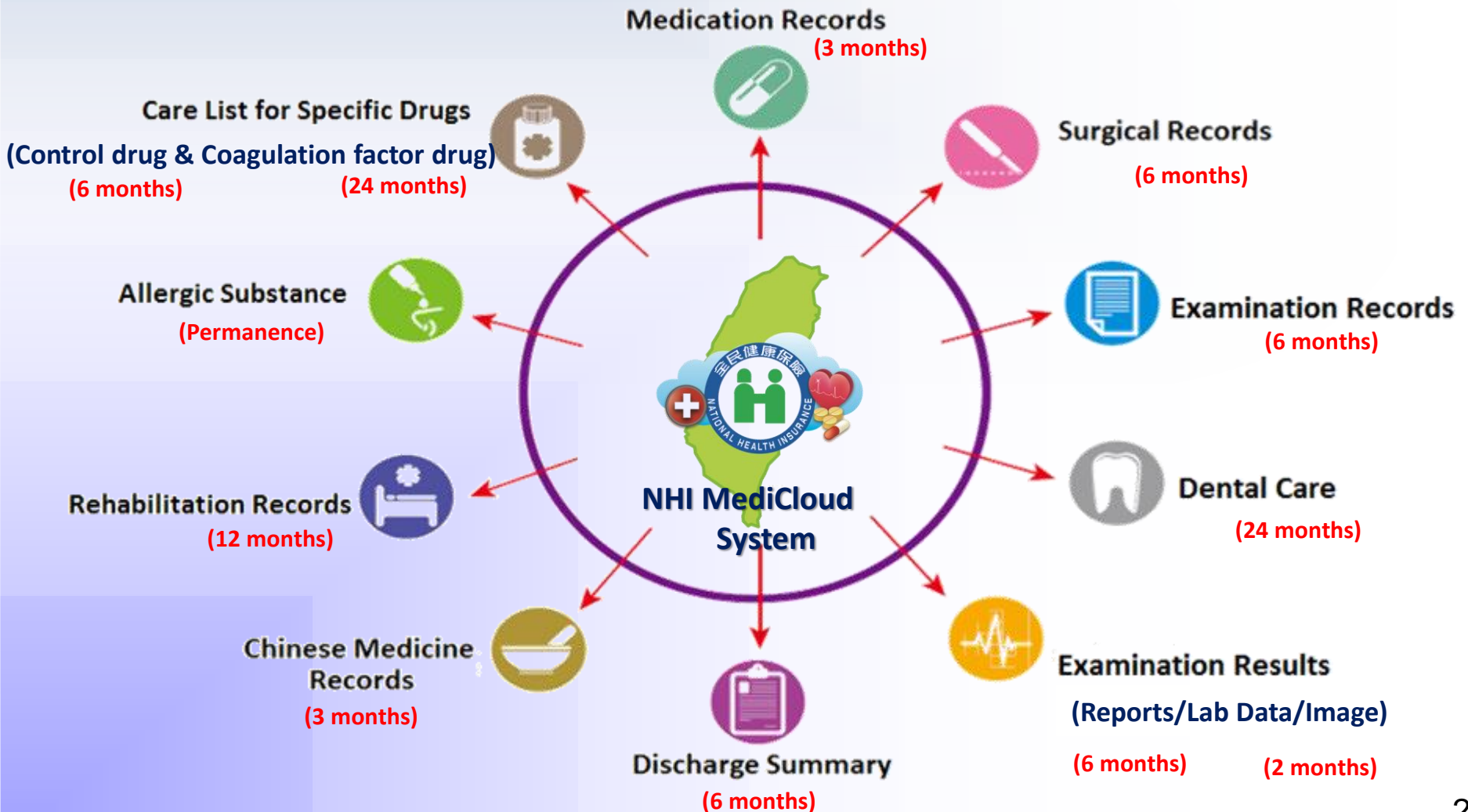Healthcare Services

Copayment

Providers

Development of NHI MediCloud System

Advantages of Single Payer System

- Mature IT Development Environment

- National Medical Data Collection

- Collection of Claim information, Medical Procedures and Results

- Medical data Sharing on a Secure Network

- To Reduce Medical Waste and Improve Medical Quality
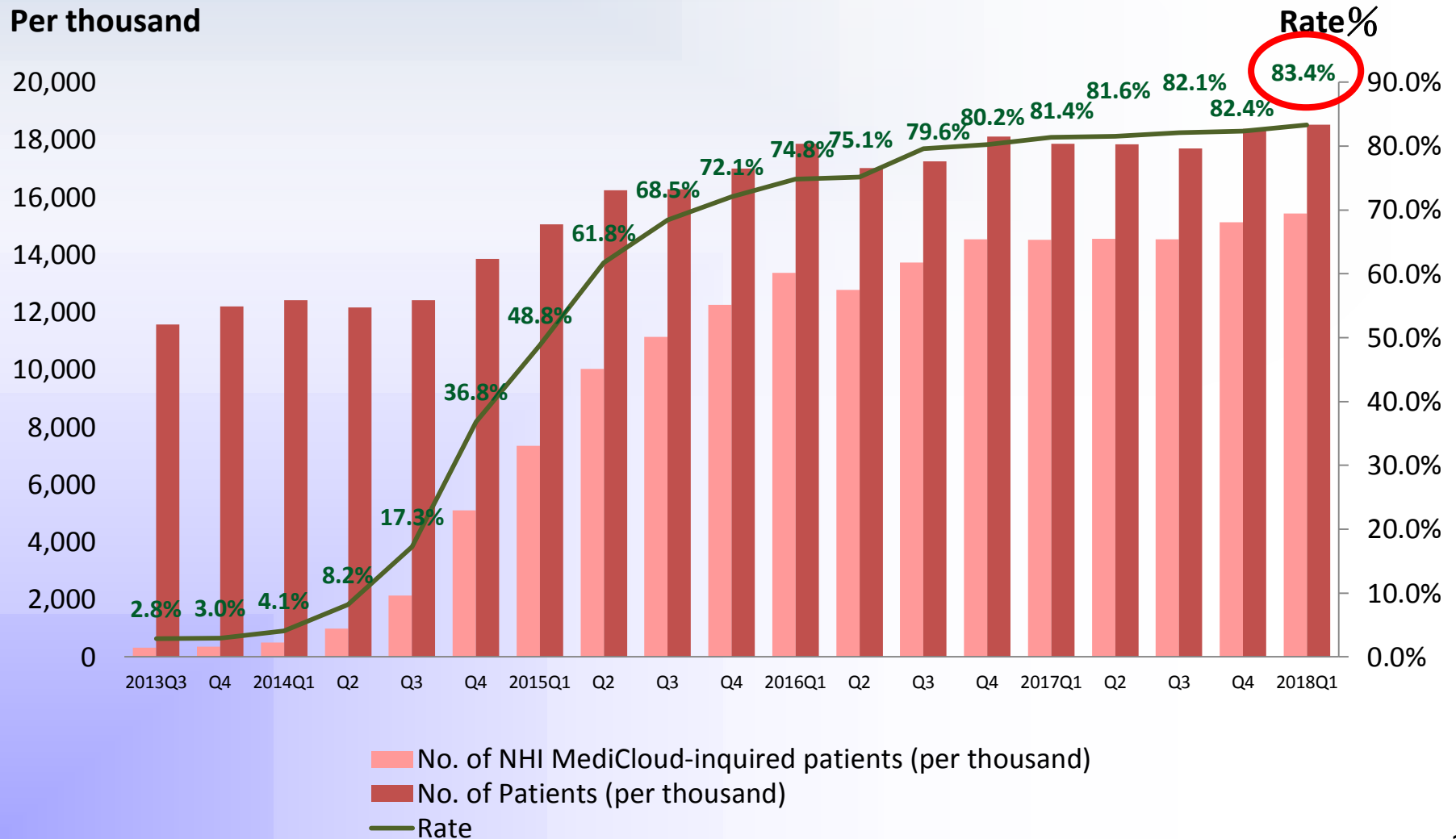
Contents of NHI MediCloud System

NHI MediCloud system incorporates information of 11 query systems

Medication Records
(3 months)

Care List for Specific Drugs
(Control drug & Coagulation factor drug)
(6 months) **(24 months)**

Surgical Records
(6 months)

Allergic Substance
(Permanence)

Examination Records
(6 months)

NHI MediCloud System

Rehabilitation Records
(12 months)

Dental Care
(24 months)

Chinese Medicine Records
(3 months)

Discharge Summary
(6 months)

Examination Results
(Reports/Lab Data/Image)
(6 months) **(2 months)**

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Utilization Rate of Medi-Cloud System

The utilization rate of NHI Medicloud grew up rapidly to **83.4%** at the first quarter of 2018.

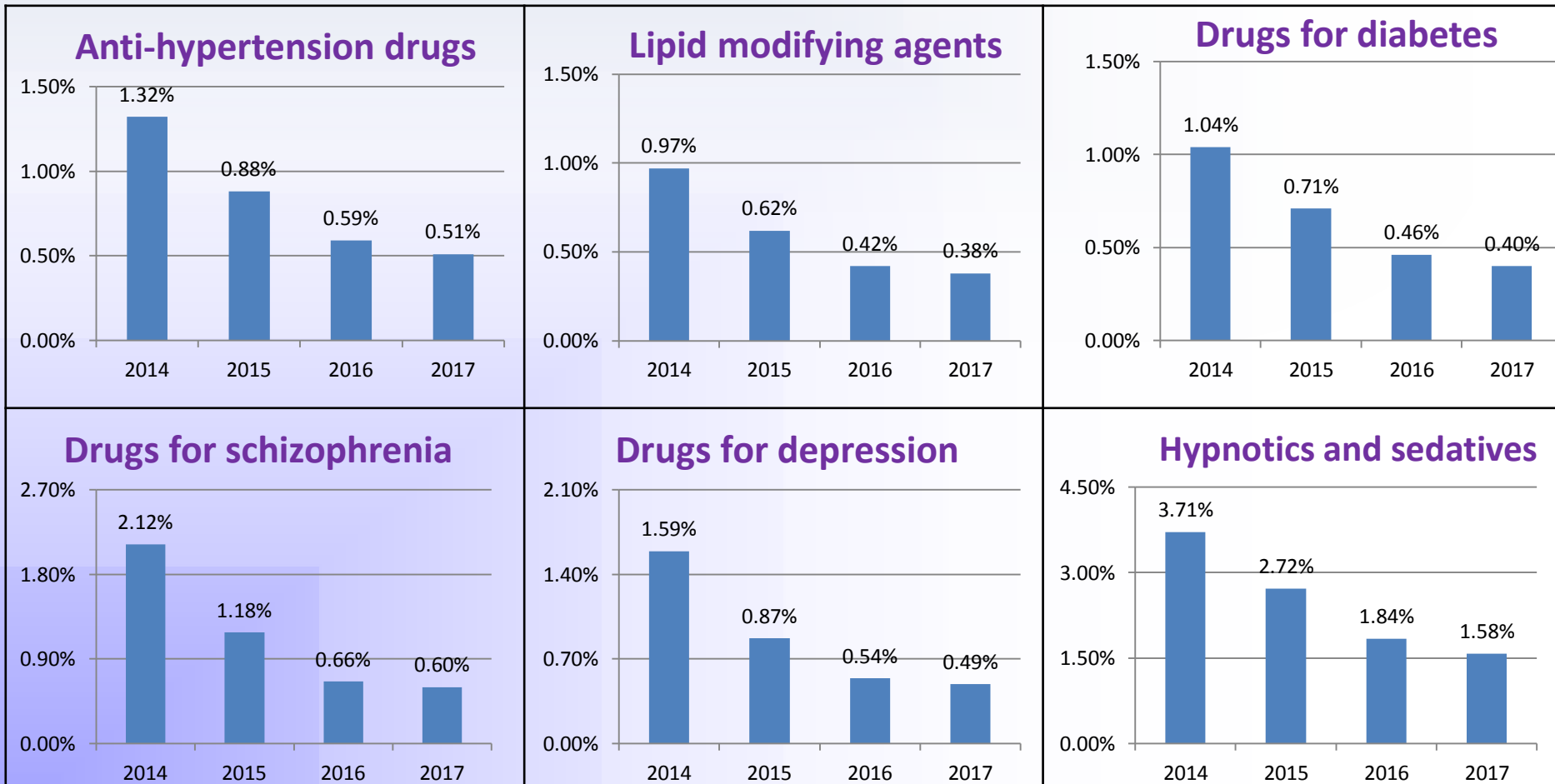**Per thousand** ... **Rate%**

Legend:
- No. of NHI MediCloud-inquired patients (per thousand)
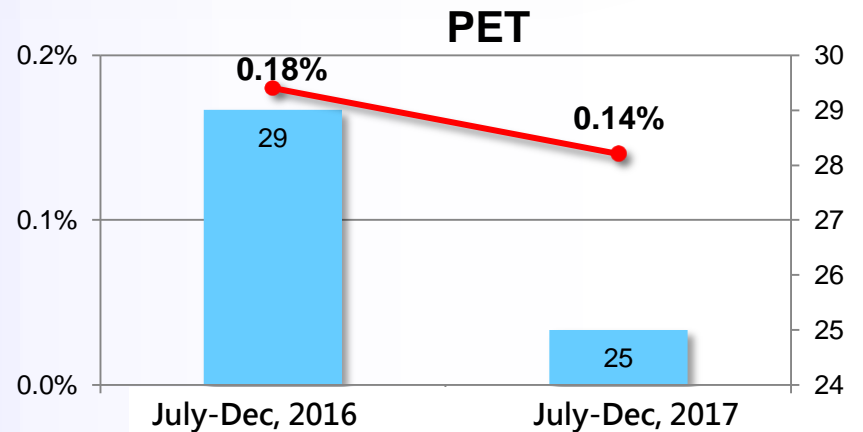- No. of Patients (per thousand)
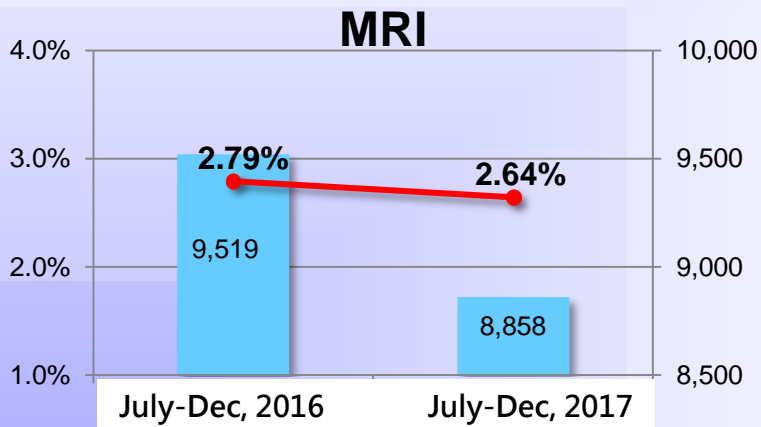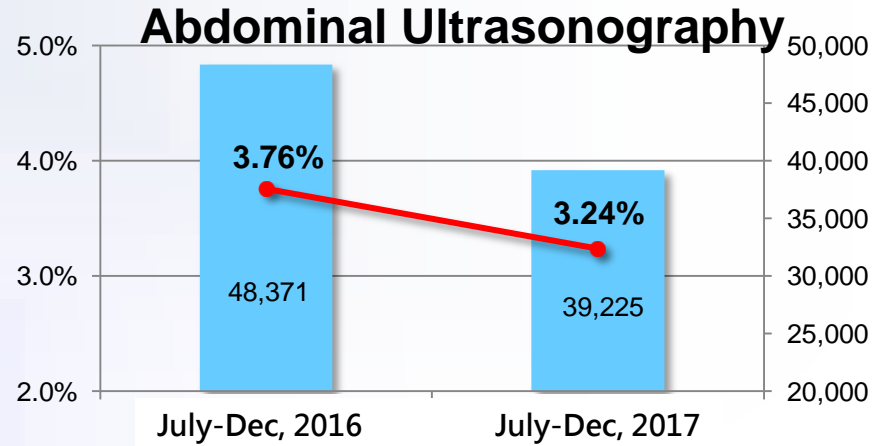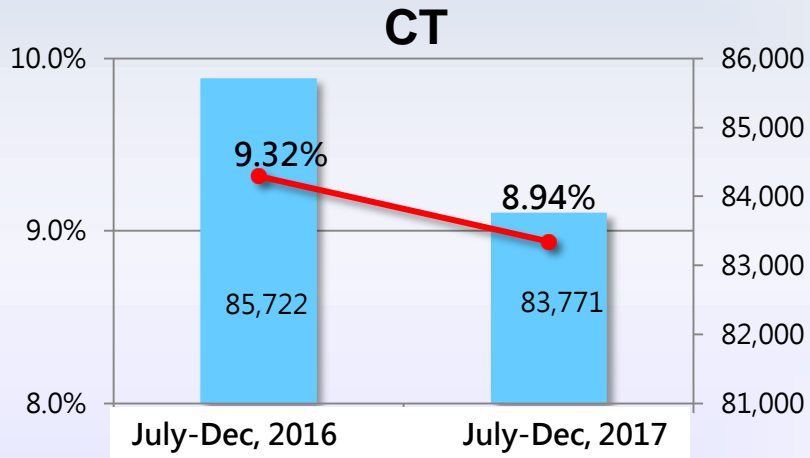- Rate

Outcomes of MediCloud System-1

- **The overlapping days of six selected groups of drugs declined 50% from 2014 to 2017.**

- **Medication duplication expenditures reduced 10 million USD from 2014 to 2017.**

1USD=30NTD

Anti-hypertension drugs

2014	2015	2016	2017
1.32%	0.88%	0.59%	0.51%

Lipid modifying agents

2014	2015	2016	2017
0.97%	0.62%	0.42%	0.38%

Drugs for diabetes

2014	2015	2016	2017
1.04%	0.71%	0.46%	0.40%

Drugs for schizophrenia

2014	2015	2016	2017
2.12%	1.18%	0.66%	0.60%

Drugs for depression

2014	2015	2016	2017
1.59%	0.87%	0.54%	0.49%

Hypnotics and sedatives

2014	2015	2016	2017
3.71%	2.72%	1.84%	1.58%

Data source：Index of NHI Medi-Cloud system from Data analysis of NHIA

Outcomes of Medi-Cloud System-2

Re-examination rate within 30 days of CT, MRI, PET and abdominal ultrasonography

CT

	July-Dec, 2016	July-Dec, 2017
Rate	9.32%	8.94%
Volume	85,722	83,771

Abdominal Ultrasonography

	July-Dec, 2016	July-Dec, 2017
Rate	3.76%	3.24%
Volume	48,371	39,225

MRI

	July-Dec, 2016	July-Dec, 2017
Rate	2.79%	2.64%
Volume	9,519	8,858

PET

	July-Dec, 2016	July-Dec, 2017
Rate	0.18%	0.14%
Volume	29	25

Re-examination volume within 30 days

Re-examination rate within 30 days

Data source：Index of NHI Medi-Cloud from NHI Data Analysis System

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CT、MRI Images Uploaded to Medi-Cloud Platform
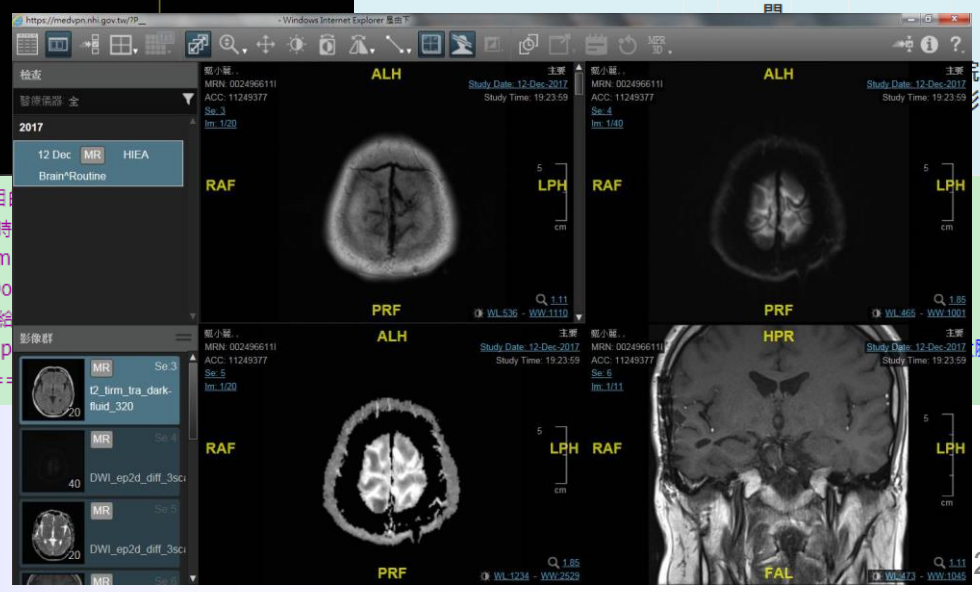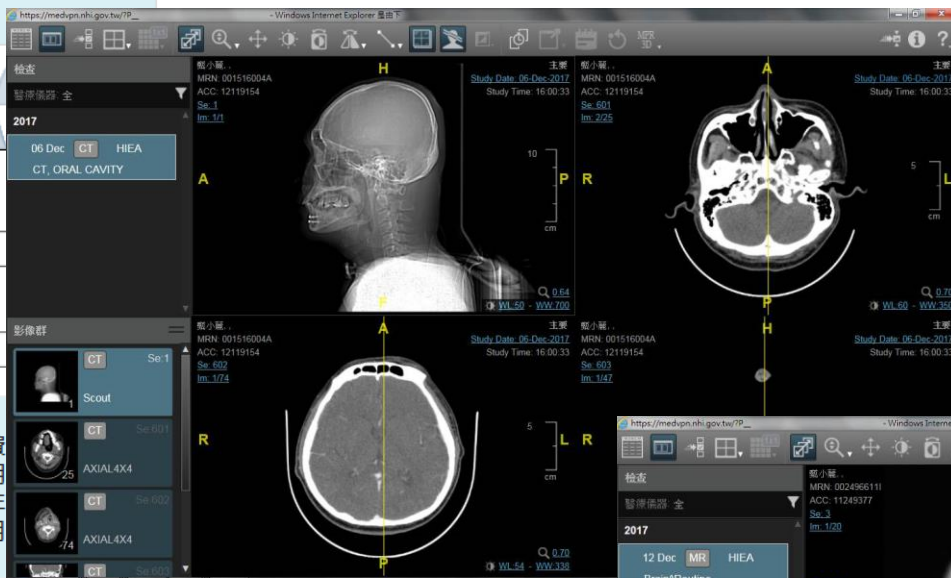
Multiple Mechanisms to Safeguard Information Security

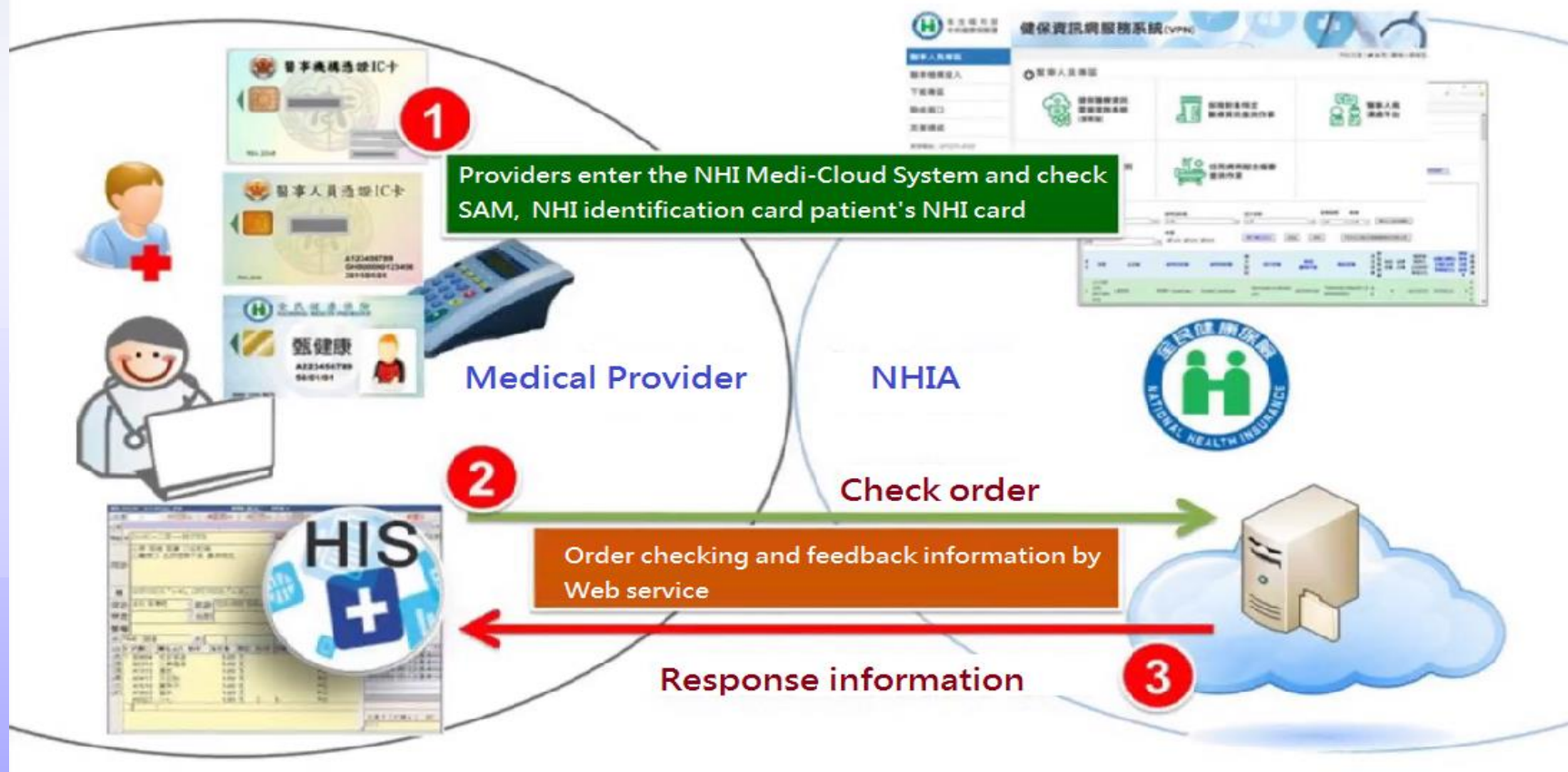Security management strategies

Closed network (Virtual Private Network)

Multiple verification mechanisms

Obliged to ensure personal privacy

Providing Interactive In-Time Notice Information through API

Development of NHI My Health Bank

Advantages of Single Payer System

- Share the Same Medical Database with the MediCloud System

- Establish a Single Platform(Internet and App) for people to download personal medical information

- Require personal identity Certification

- The purpose is to return personal medical information to individuals and assist people in self-health management

My Health Bank

My Data, My Decision

Established in 2014 and added newly functions in 2016：

- better self-care and healthier lifestyle
- 3 Years of medical data
- Health information is displayed in the form of diagrams to enhance readability
- Provide educational guidelines
- Simpler access
- Certain disease prognosis and evaluation

健康存摺

MY HEALTH BANK

Friendly Download Interface

With more advanced encryption, the system can be activated by using only the number and password of the NHI IC card or the Personal Identification Card. The physical cards are not necessary.

Web

Login:
1. **Keying the number and password of the NHI smart card**
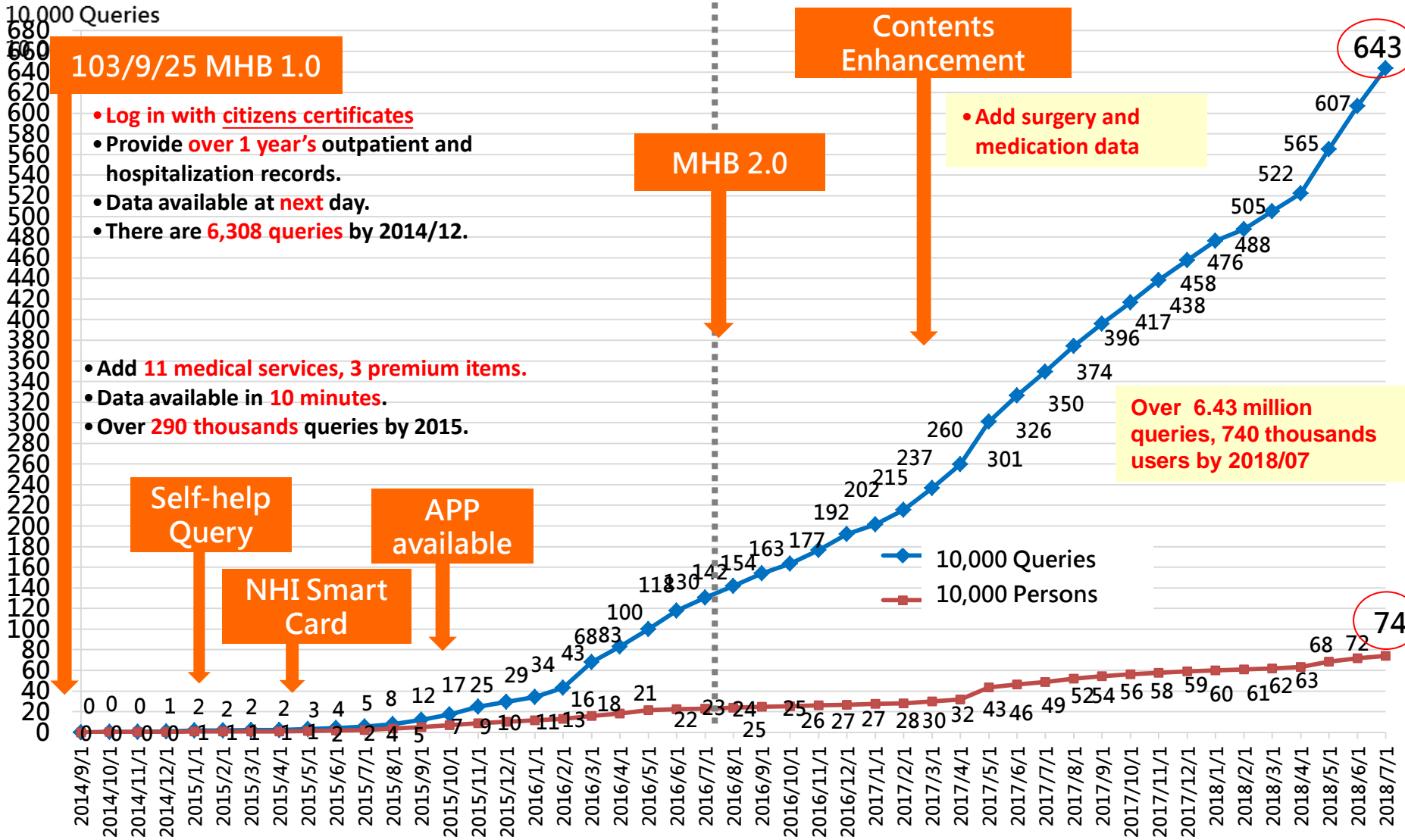2. **Citizen digital certificate card**

Apps/application

My Health Bank Utilization

MHB 1.0 → ← **2.0**

103/9/25 MHB 1.0

- **Log in with citizens certificates**
- Provide **over 1 year's** outpatient and hospitalization records.
- Data available at **next** day.
- There are **6,308 queries** by 2014/12.

- Add **11 medical services, 3 premium items.**
- Data available in **10 minutes.**
- Over **290 thousands** queries by 2015.

Contents Enhancement

- **Add surgery and medication data**

MHB 2.0

Over 6.43 million queries, 740 thousands users by 2018/07

Self-help Query

NHI Smart Card

APP available

643

74

10,000 Queries

10,000 Persons

Contents of My Health Bank

Individual 3-year medical records

CKD evaluation with examination results

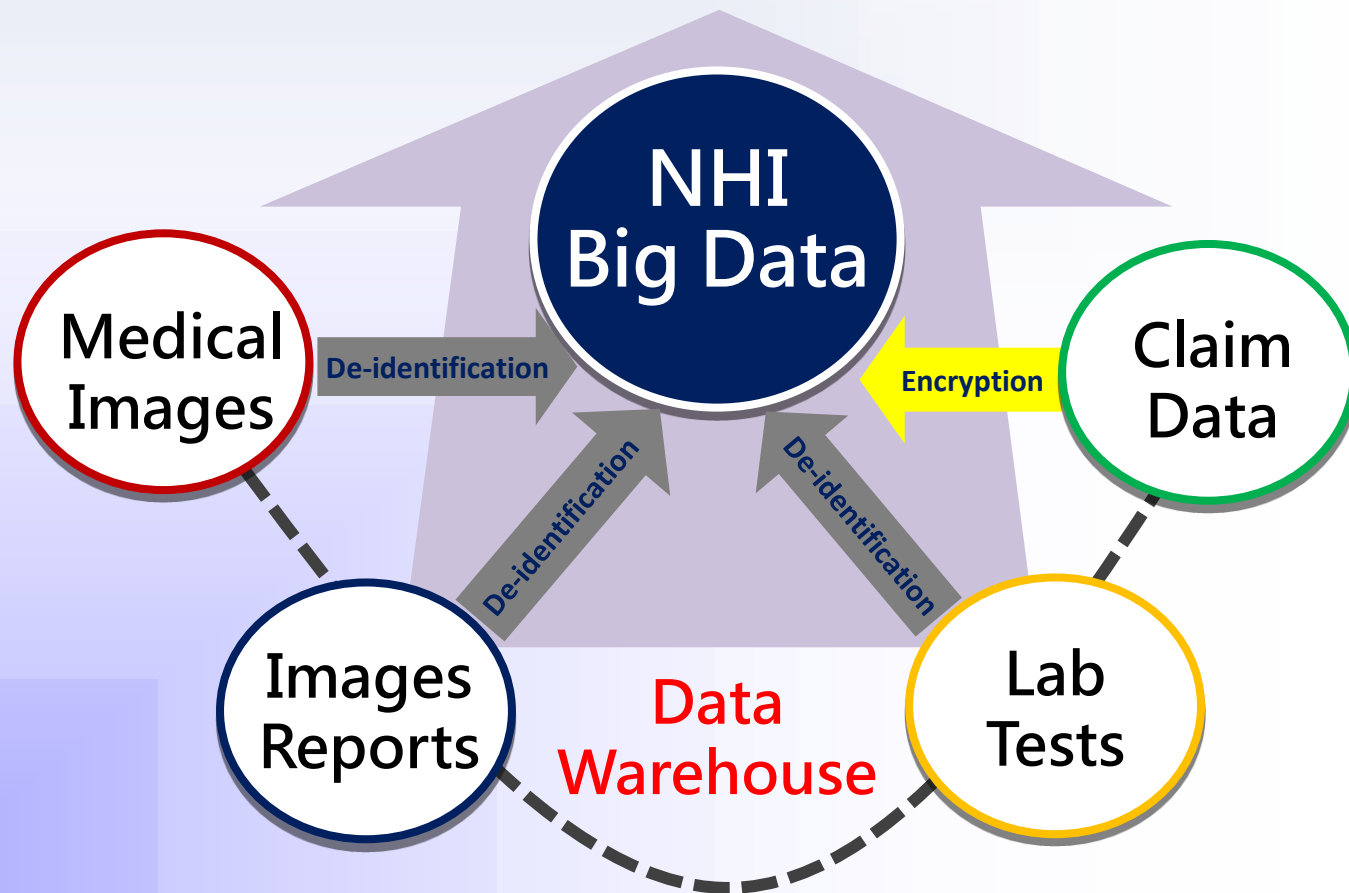**Dental services with visualized illustration**

Hyperlinks of health education sites

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AI Application by using NHI Big Data

All the data was de-identified to protect personal privacy for AI application

NHI Big Data

Medical Images

De-identification

Claim Data

Encryption

Images Reports

De-identification

De-identification

Data Warehouse

Lab Tests

Challenges and Perspectives

Challenges and Perspectives

Challenges

- Rising life expectancies

- Increasing prevalence of chronic diseases

- More demands on new medical devices and new drugs

- Make good use of Information Technology

Perspectives

- Improve Medical Efficiency

- Reduce Medical Waste

- Artificial intelligence for NHI operations

- Improve Medical Quality

*Thank you
for your kind attention!*