

HIS 2025

Big Data-Driven Policies:

Taiwan's Experience

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June 11, 2025

Part 1

About Taiwan and its NHI

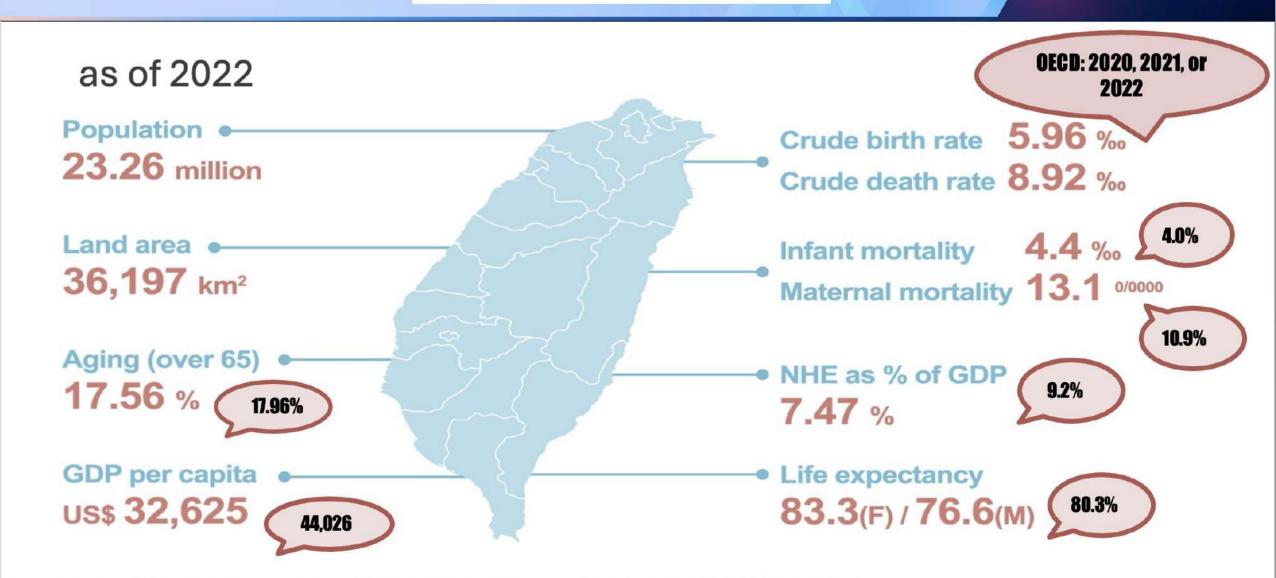
Part 2

Data-Driven Policies: Two Examples

Part 3

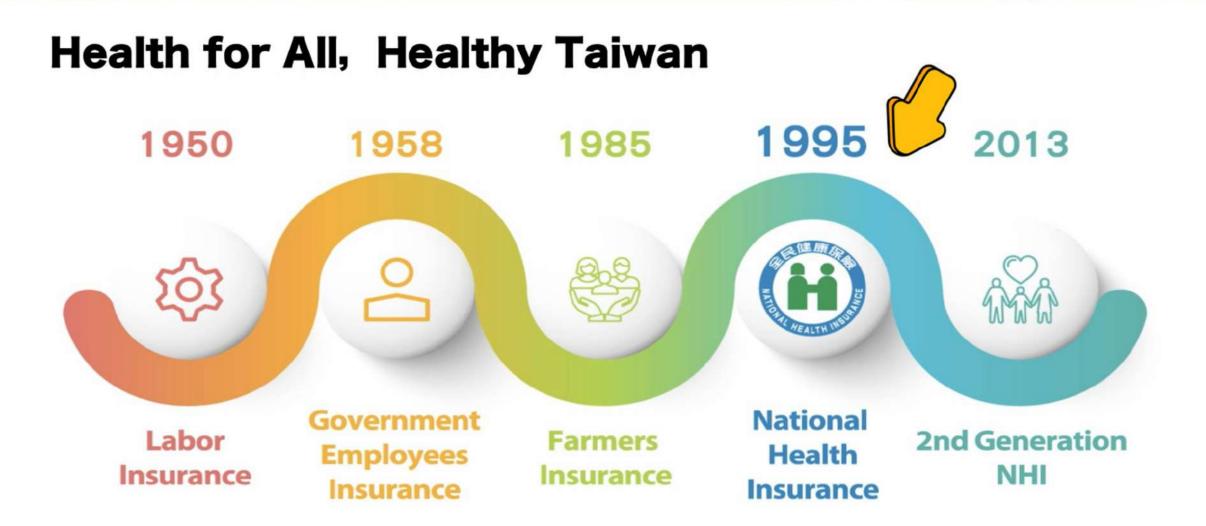
Ongoing Challenges and Efforts

About Taiwan

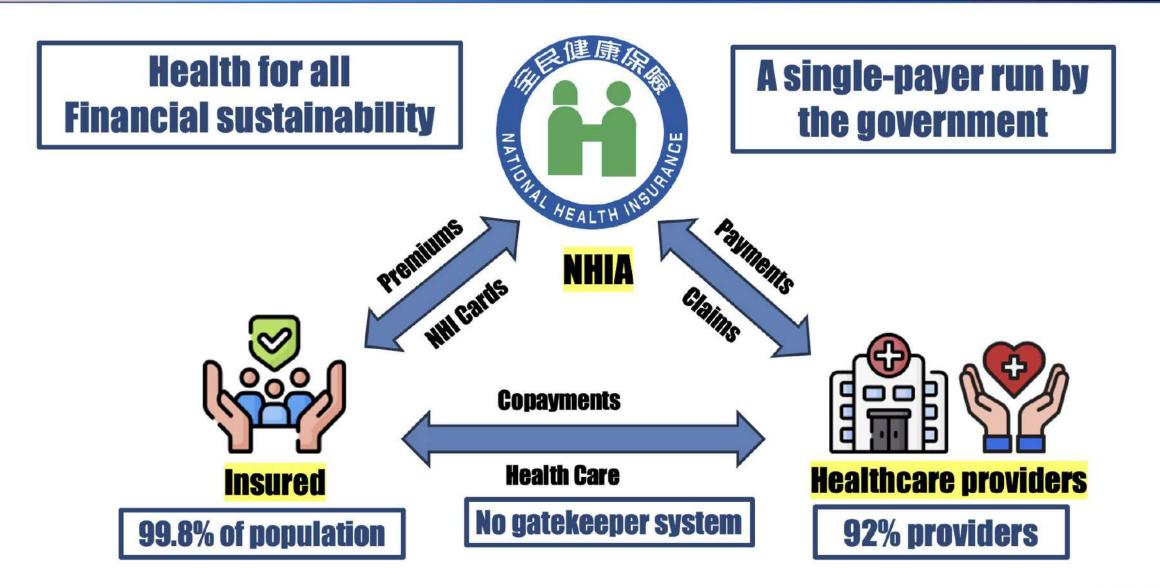


Source: NHIA: https://nhifile-nhi.cdn.hinet.net/media/Taiwan's%20National%20Health%20Insurance%202024-2025(全民健保英文簡介)1130820.mp4
https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=OE/. https://www.oecd.org/en/publications/health-at-a-glance-2023 7a7afb35-en/full-report/indicator-overview-country-dashboards-and-major-trends d4962905.html#chapter-d1e843-3c7a7758e7/. https://www.oecd.org/en/topics/ageing.html?oecdcontrol-90d4bb70b2-var1=OECD

About Taiwan



Features of NHI: Mission



Features of NHI: Coverage







Comprehensive coverage









Inpatient care

Outpatient care

Drugs

Dental services







Day care for mental illness



Home-based medical care

Features of NHI: Payment

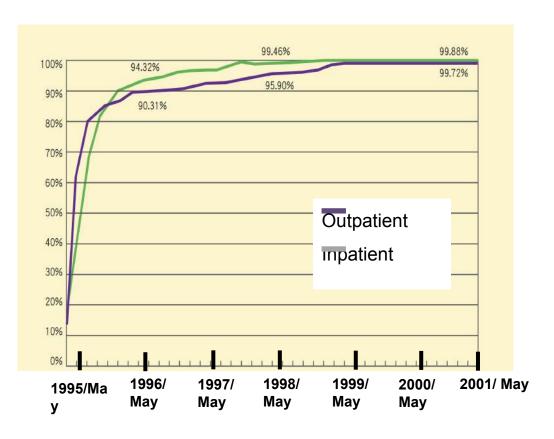
1995 **FFS** Global Budget (GB) 1998 2001 2002 2003 2000 **Chinese Western Primary Outpatient Dental Care Clinic** Medicine **Dialysis Regional-based GB** Hospital 2003 202 Individual Regional-based hospital-based GB

GB

Features of NHI: Population-based Data

Provider Side: Claims Submission

Paper-based System Electronic System



Patient Side:



1995





2004

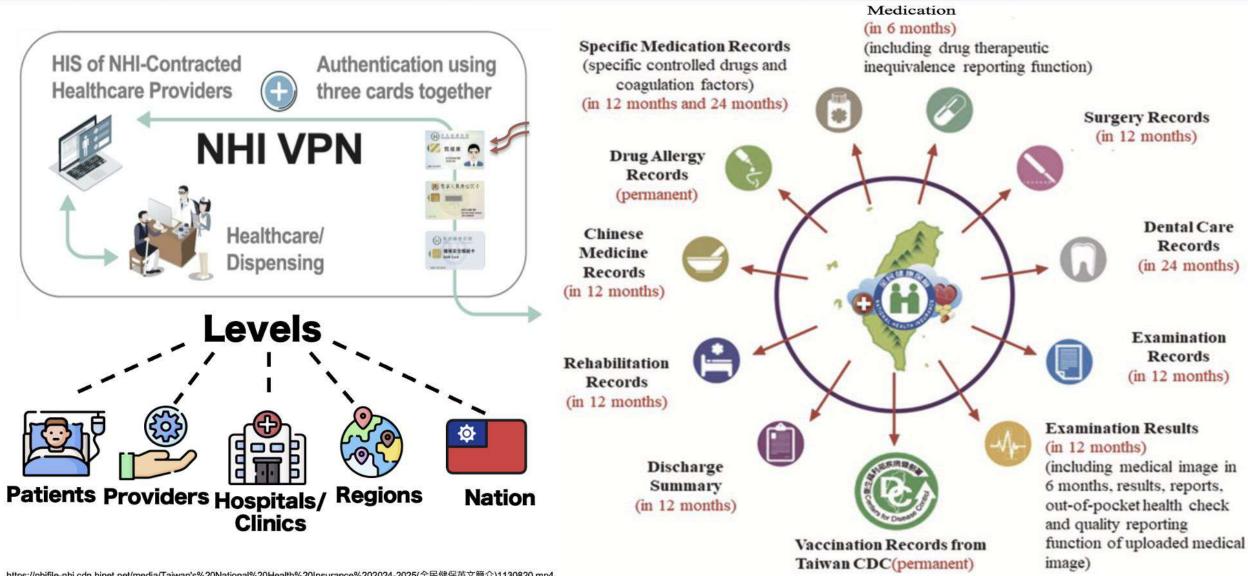


Medical Information

Consents:

Organ Donation Palliative Care Do Not Resuscitate

Features of NHI: Population-based Data



https://nhifile-nhi.cdn.hinet.net/media/Taiwan's%20National%20Health%20Insurance%202024-2025(全民健保英文簡介)1130820.mp4
Lee, PC et al.(2022). Digital Health Care in Taiwan: Innovations of National Health Insurance, Spinger. https://doi.org/10.1007/978-3-031-05160-9

Features of NHI: Data-Driven Policies

Goals: Maximize Achievable Benefits



Features of NHI: Data-Driven Policies

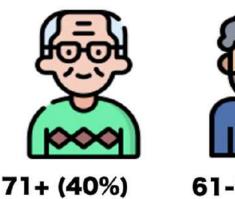
- Pharmcloud/ Medicloud
- Pay for Performance
- Patient-Centered Care for Hospital
 Outpatient Departments
- Periodontal Disease integrated
 Care
- Preventive dental care for high risk patients

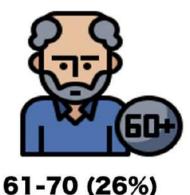
- Pilot Project for Post Acute Care
- Integrated Home Health Services
- Integrated Delivery Service
- Family Physician Integrated Care
- Telemedicine for Remote Areas
- Integrated Inpatient Care

Case 1: Duplicate Medications & Tests

Evidence

High risk population and their top duplicate medications







51-60 (17%)

- Antihypertensive drugs(25%)
- Sedative-hypnotic drugs(16%)
- Antithrombotic agents(12%)
- Antihyperlipidemic agents (10%)
- Hypoglycemic agents(10%)

Case 1: Duplicate Medications &

Tests

Causes

System:

Affordable and accessible healthcare

. Patients:

No gatekeeper systems , doctor shopping

. Providers:

Lack of information from other providers

Case 1: Duplicate Medications &

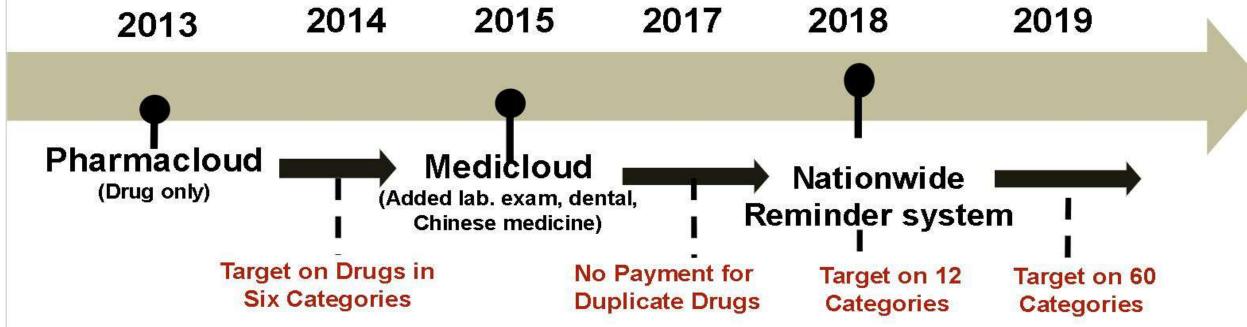
Tests

Interventions

Sharing information among providers

Improving patient safety while reducing waste





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https://aia.kcg.gov.tv/N.evs_Content.aspx?n=07BC80F5B3804799&sms=3DFEC1726D932EE7&s=FD89DAFF13CC15E7

ttps://www.nhi.gov.tw/ch/cp-7531-381b1-3255-1.html

https://journals.lww.com/lww-medicalcare/fulltext/2012/41000/Continuity of Care, Potentially Inappropriate 15.asp

Case 1: Duplicate Medications &

Tests

Results

Medications

Antihypertension

Lipid Lowering Agent

Antidiabetic drug

Drug for Schizophrenia

Drug for Depression

Hypnotics and Sedatives

2014(%)

1.32

0.97

1.04

2.21

1.59

3.71

USD 285 M

2020(%)

0.37

0.29

0.30

0.47

0.40

1.30

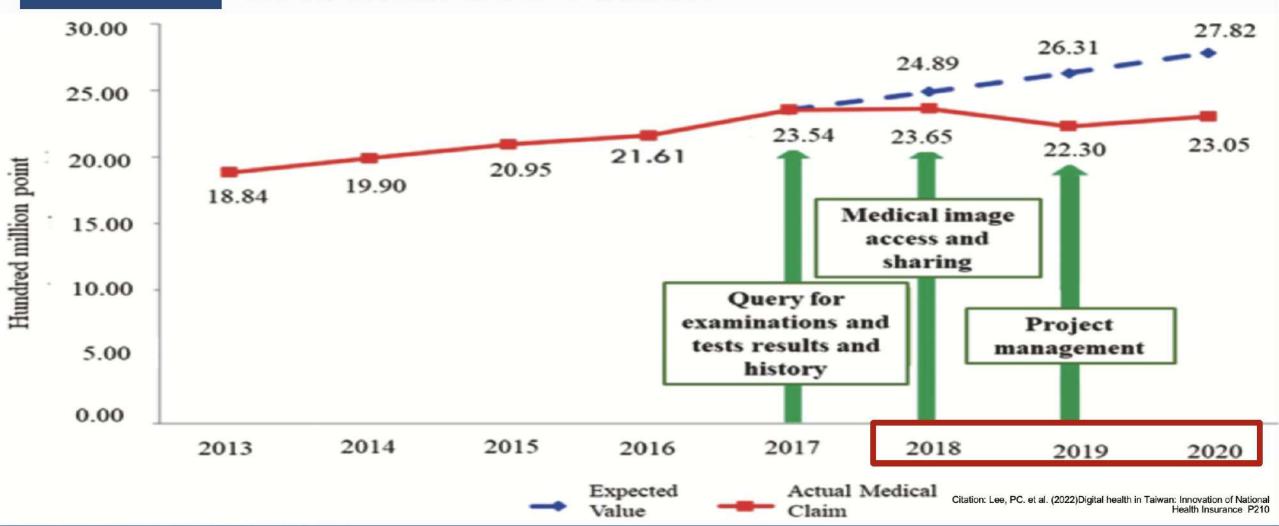
Get it from the cloud Taiwan Hoare ppt file . Citation:

Case 1: Duplicate Medications &

rests



2018-2020: USD 1 billion



Case 1: Duplicate Medications &

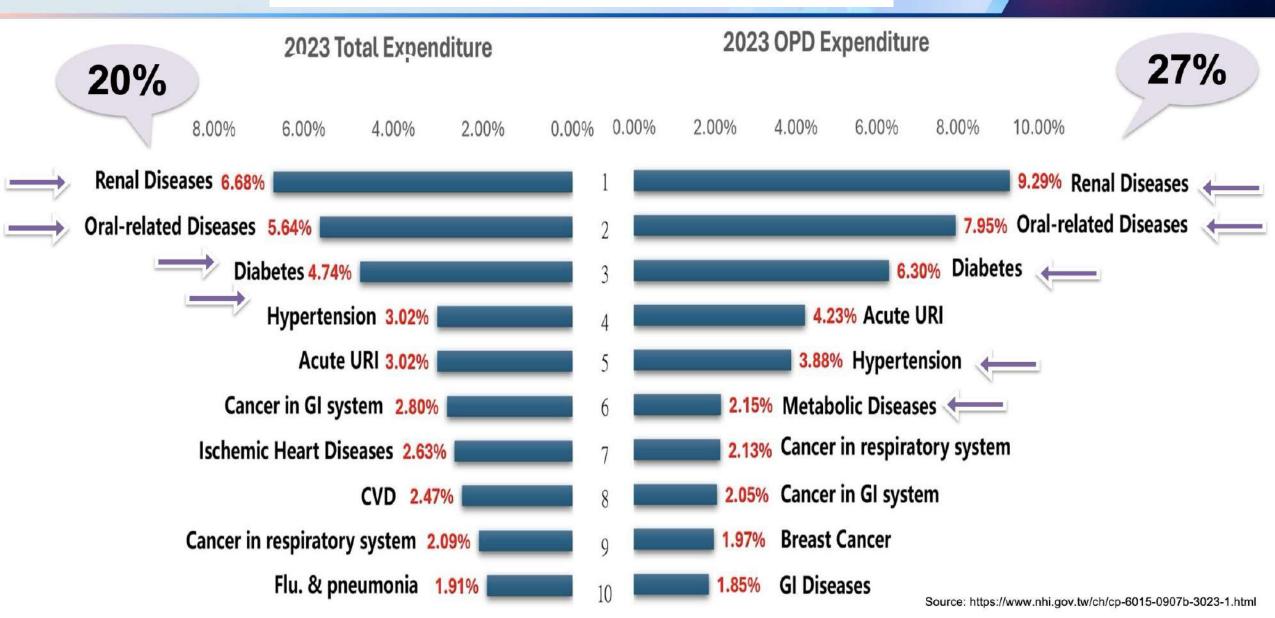
Tests

Conclusion about Medicloud

1. Reducing duplicate medications, tests, and examinations

2. Improving patient safety while reducing cost

Case 2: Costly Diseases



Case 2: Costly Diseases

Interventions

P4P

2001

2010

2011

2013

Diabetes Mellitus, Breast Cancer, Asthma Hepatitis B and Carriers, Schizophrenia, Maternity Care

Chronic Kidney
Disease(CKD)

Pre-ESRD

2015

2017

2022

2023

Early Intervention for Children

Chronic Obstructive
Pulmonary Disease
(COPD)

Metabolic Syndrome
Diabetes and ESRD
Integrated Care

Cancer , Chronic infectious

Disease(TB,LTBI ,HV)

Case 2: Costly Diseases

[Phase 1 2001-2006]



Provision of the following services

- Lab. evaluation (e.g., HbA1c or LDL)
- Medical history assessment
- Physical exam.
- Management plan
- Diabetes self-management health education

[Pay for Process of Care]

Incentives: extra physician fee

- Regular visit: USD 15
- Initial enrolment visit: USD 60
- Follow-up visit: USD 30
- Annual evaluation: USD 75

Case 2: Costly Diseases

Phase 2: 2007- present



Pay for Intermediate Outcomes

- HbA1c (glycated hemoglobin)
 - HbA1C well control rate :<7.0% (<8.0% for aged 80 and above)
 - HbA1C poor control rate: >9.0%
 - HbA1C improvement rate: compared to last year, the HbA1c is improved by 5% and above
- UACR (urine albumin-creatinine ratio)
 - UACR well control rate: <30mg/gm
 - UACR poor control rate: >300mg/gm
 - UACR improvement rate: compared to last year, the UACR is improved by 5% and above

■ LDL

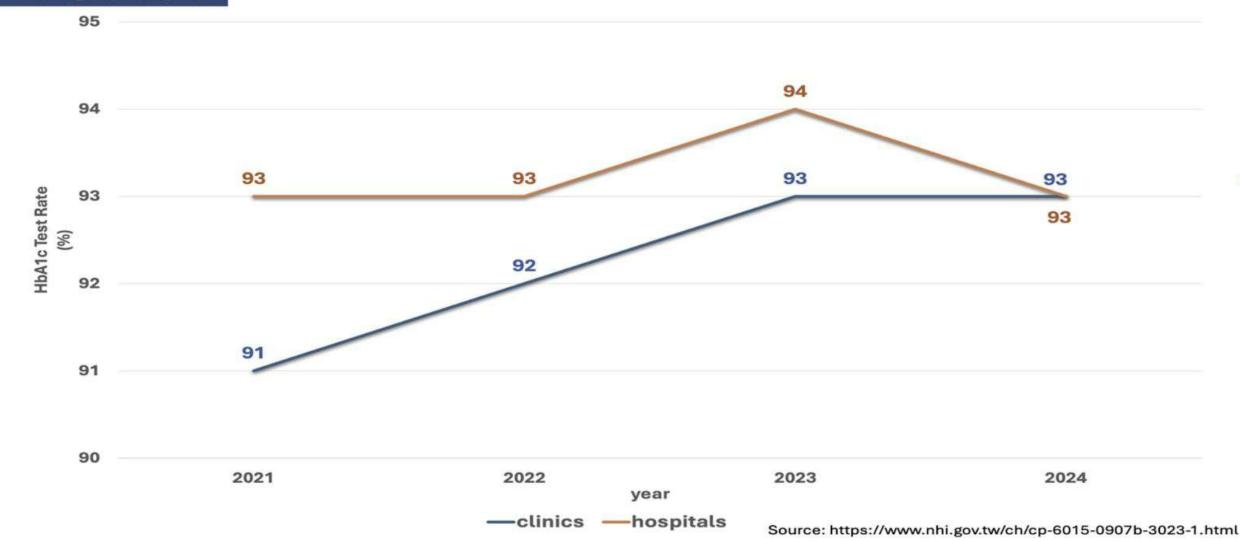
- LDL well control rate : <100mg/dL
- LDL poor control rate: >130mg/dL
- LDL improvement rate: compared to last year, the UACR is improved by 10% and above
- Number of New cases Complete follow-up Incentive:

Top 25th/30th percentile hospital and providers receive extra pay for USD 30 for completed annual follow-up cases

Case 2: Costly Diseases



Result As of 2023: 62.4% enrolled in P4P



Case 2: Costly Diseases

Cost-Saving^a: P4P vs. non-P4P

	DM only	DMHH ^b
Quality adjusted life year	0.082	0.085
DM-related ED and inpatient care	440	293
All Medical Cost	1,112	1,339

a: One USD=32NTD

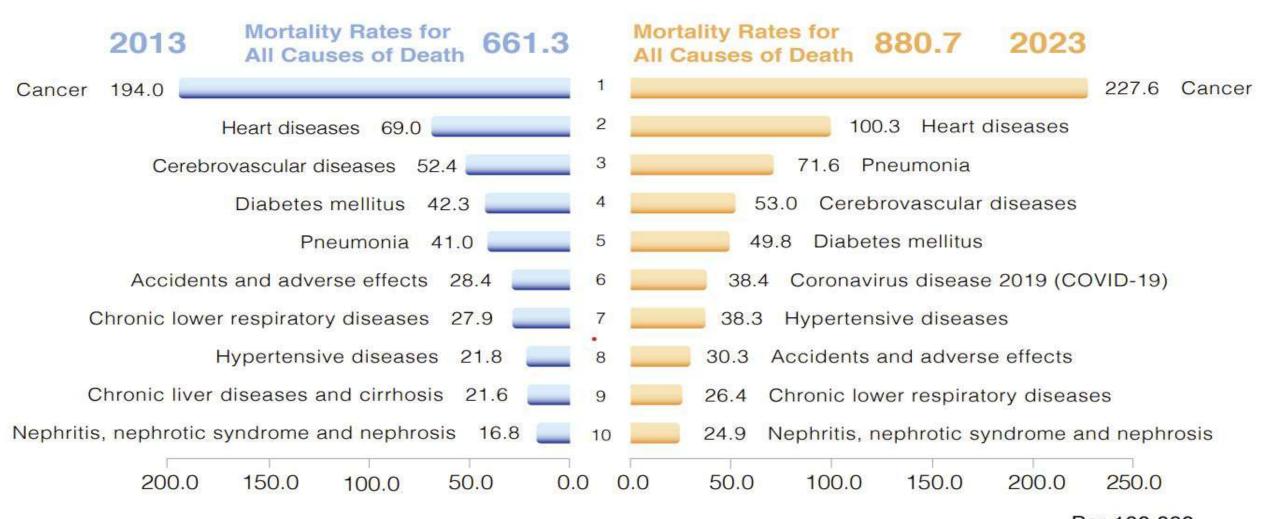
b:DMHH: patients with diabetes, hypertension, and hyperlipidemia

Case 2: Costly Diseases

Conclusion about Pay for Performance

- 1. Improving quality of care and reducing cost.
- 2. It is a voluntary program. High-risk or poor patients have a likelihood of being excluded from the P4P.

Ongoing Challenges and Efforts Deadly Cancer

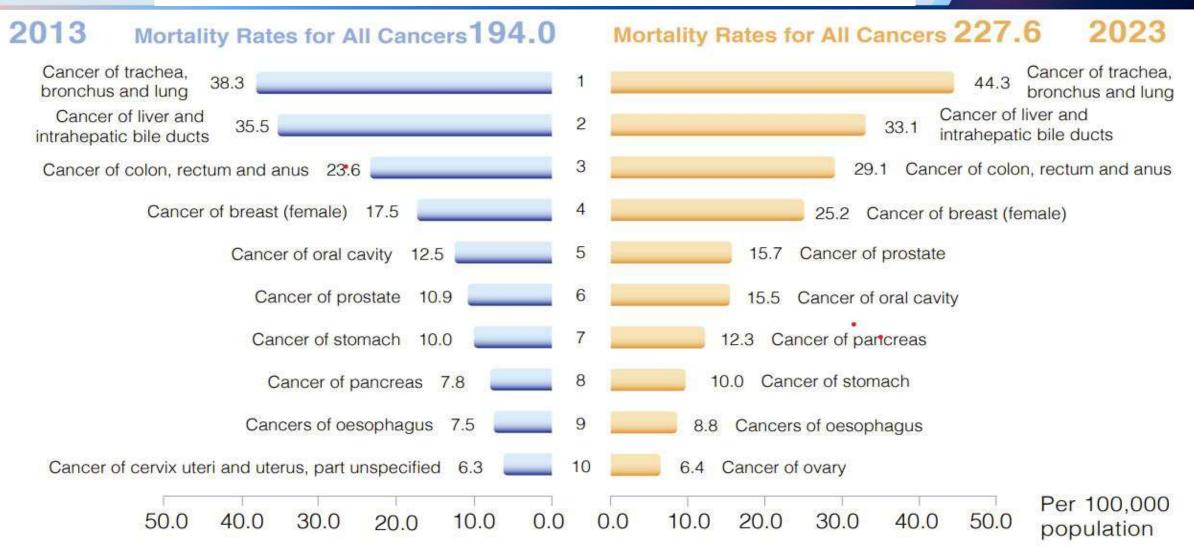


Source: Department of Statistics, MOHW, R.O.C. (Taiwan)

Note: The data for 2013 is the "value adjusted by conversion ratio" and not the original releases of statistical data.

Per 100,000 population

Ongoing Challenges and Efforts Deadly Cancer



Source: Department of Statistics, MOHW, R.O.C. (Taiwan)

Note: The data for 2013 is the "value adjusted by conversion ratio" and not the original releases of statistical data.

Ongoing Challenges and Efforts Costly Rare Diseases

(1usd=32TWD)

Type of User	Medical Expenses (2022)	Equivalency
Per capital	US\$1,145	1.0
Per cancer patient	US\$6,648	5.8
Per rare disease patient	US\$22,848	20.0
Per hemophilia patient	US\$93,890	82.0

https://nhifile-nhi.cdn.hinet.net/media/Taiwan's%20National%20Health%20Insurance%202024-2025(全民健保英文简介)1130820.mp4

Ongoing Challenges and Efforts

Efforts(examples)

Screening for early detection and treatment.

a. Lung cancer screening

2022: LDCT for smokers or individuals with family history

b. Breast cancer screening

2004: aged 50~69

2009: aged 45~69

2020: aged 40~44 (high

risk)

c. Newborn screening of SMN1 gene for spinal muscular atrophy (SMA)

Ongoing Challenges and Efforts

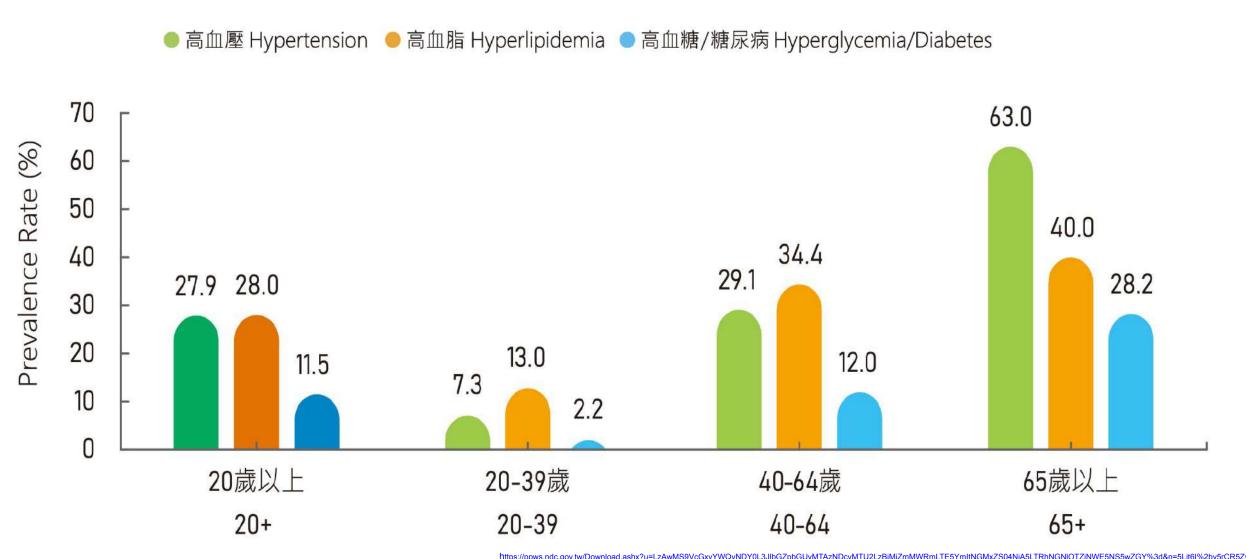
Efforts

Covering effective medications and treatment

- a. Examples of Cancer
 - i. Breast cancer: targeted therapy for HER2-positive cases trastuzumab emstansine for early-stage cases
 - ii. Multiple myeloma: triplet treatment
 - \$5 million USD investment, benefiting 3,085 patients
- b. Example of rare disease: SMA
 - i. drug: zolgensma

Benefits 218 patients, with saving \$0.2 million USD/ person/ year

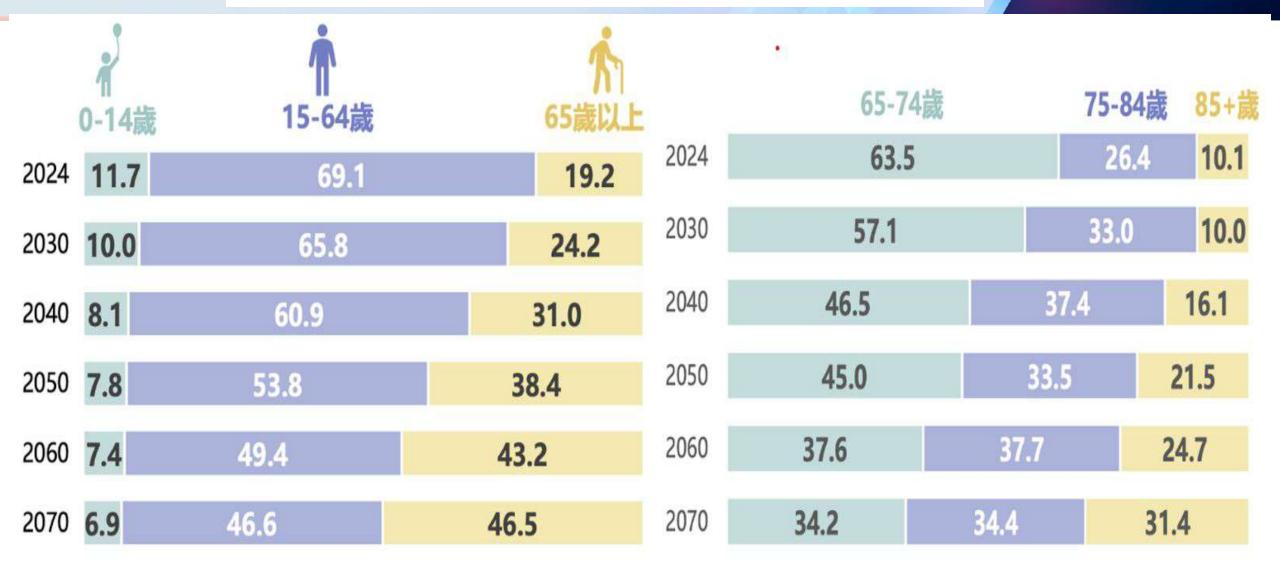
Ongoing Challenges and Efforts High Prevalence of Chronic Diseases



https://www.hpa.gov.tw/EuroPages/Detail.aspx?nodeid=3850&pid=18598

https://www.hpa.gov.tw/EnoPages/Detail.aspx?nodeid=3850&pid=18598

Ongoing Challenges and Efforts Fast-rising Aging Population



Ongoing Challenges and Efforts

Interventions [A good hospital in the community, a good doctor nearby]

Enhance Primary Healthcare Service Capacity (ex.Open primary care indicators; expand the scope of outpatient services)

populations seeking medical care)

Improve Public Knowledge of Self-Care (ex. Strengthen public education on tiered healthcare)



(ex.Establish a referral information exchange platform)

Ongoing Challenges and Efforts

My Health Bank

Personal Health Data (PHR) Platform



Users: 11.43 million

Number of uses: 383,23 million

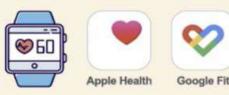
(As of December 31, 2023)

Sources of Health Data in My Health Bank:

- · Claim Data
- · NHI Card Data
- Data Contributions from Healthcare Providers
- · Data from Other Agencies
- Disease Risk Assessment Reports
- · Disease Surveillance Reminders
- · Self-Reported Data

For Better Health Management:

► Integrating Health Data from Wearable Devices



- ► Optimizing Integration of Health Data
- ► Sharing Personal Health Data with Trusted Partners

Applications:

- · Coronary Artery Calcium Scoring
- Osteoporosis Evaluation
- · Obesity Prevention

▶ Creating a Robust Health
Data Ecosystem with SDK



Providing an SDK as a Tool for Sharing Health Data



https://phifile_phi.edn.hipst.not/modis/Taiwan's%20National%20Nasith%20Insurance%2020A_2025/全层键层签文符令1120220 mn/

Health for All, Financial Sustainability

Digital Transformation

Emerging Technologies

Patient-Centered
and Valued
Healthcare

Service Optimization

Innovative Model

Health for All, Financial Sustainability

