1ˢᵗ INSPIRE Health Forum

IT based NCDs Management Systems for the Elderly in NHIS

WHO Collaborating Centre for Health Insurance Governance and Services
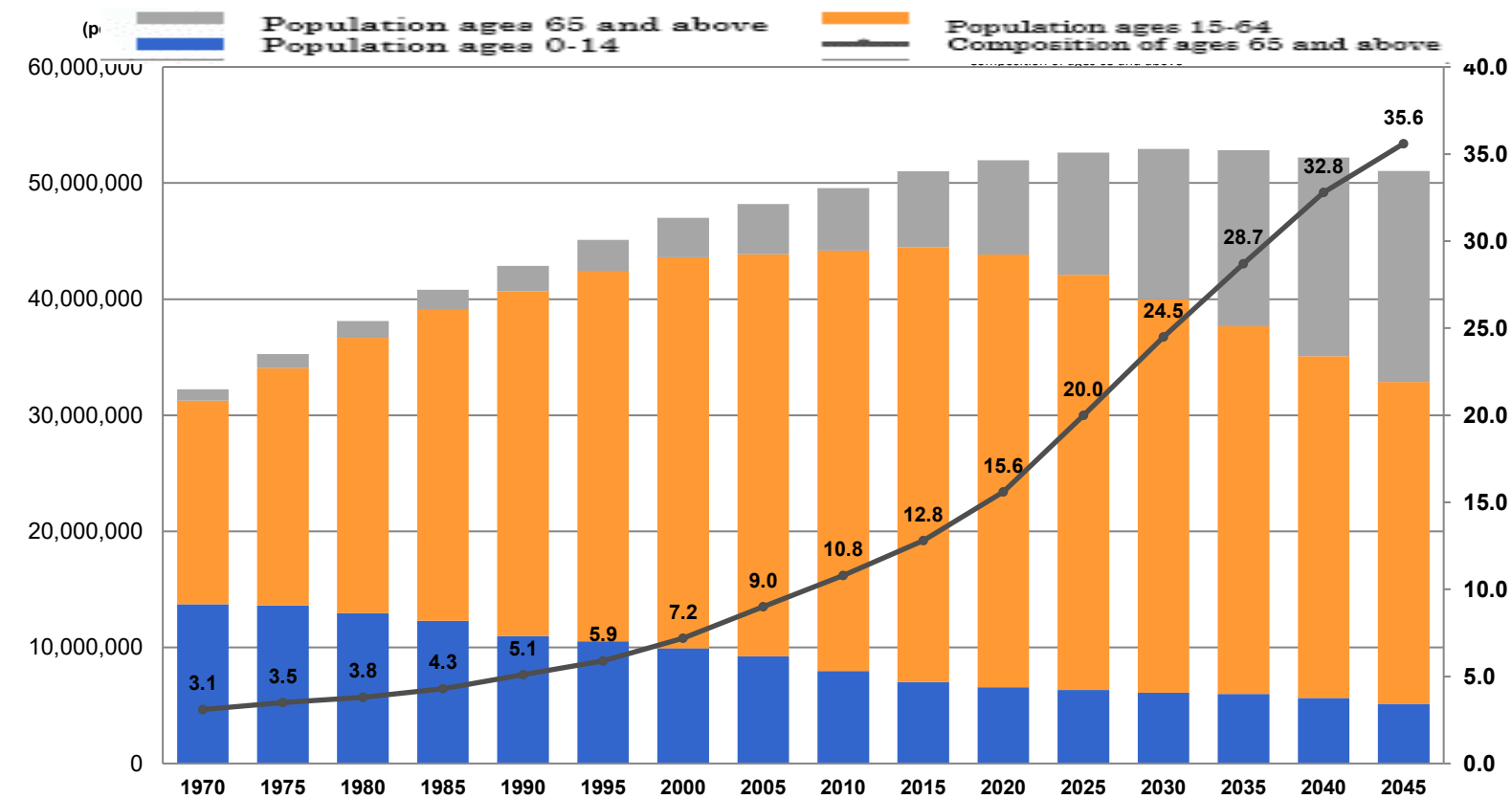
Dr. Yanghee Kim
National Health Insurance Service
Republic of Korea

1 Implications of Rapid Aging :
Increasing Diseases Burdens Due to Population Aging

- **Population over 65Y was over 20% of total population in 2025**
- **The percentage will reach over 35% of total population in 20 years later**

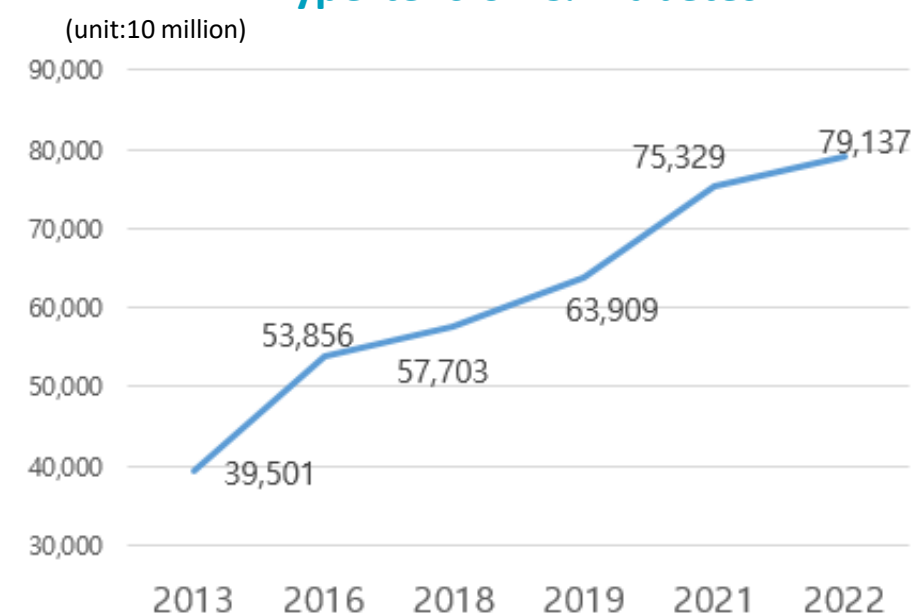Source: 2022 Statistics Korea: Population Estimates

1 Implications of Rapid Aging : Increasing Diseases Burdens Due to Population Aging
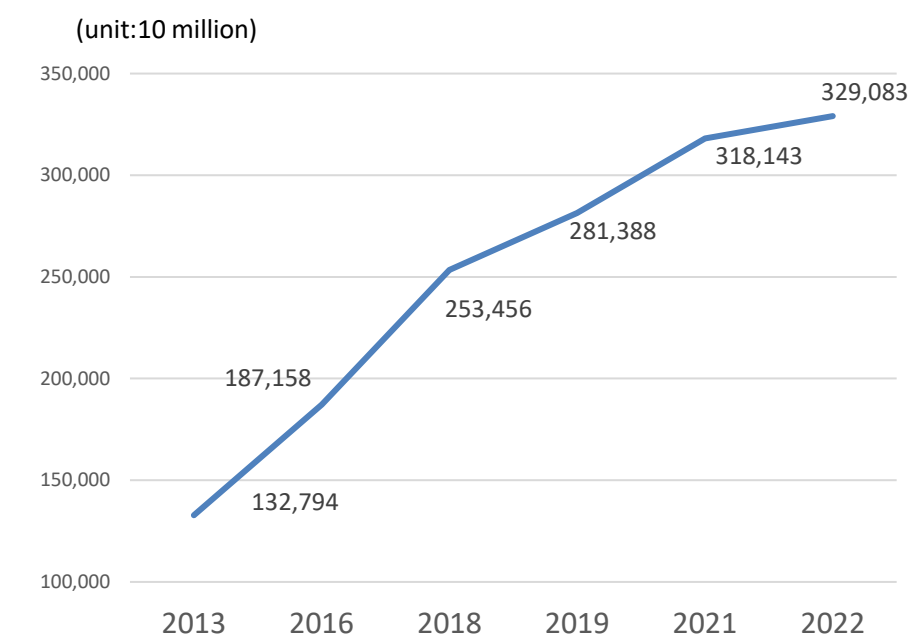
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- **20.6 million patients with NCDs (40.1% of the total population)**
- **Treatment cost for chronic disease is almost 3 billion dollars (38% of the total treatment cost as of 2022)**

Medical cost for Hypertension & Diabetes

(unit:10 million)

- 39,501
- 53,856
- 57,703
- 63,909
- 75,329
- 79,137

2013 2016 2018 2019 2021 2022

Medical cost for chronic diseases

(unit:10 million)

- 132,794
- 187,158
- 253,456
- 281,388
- 318,143
- 329,083

2013 2016 2018 2019 2021 2022

Source: 2022 Health Insurance Statistics Annual Report

National Health Check-Up:
Lifetime Periodic Health Screening & Cancer Screening

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< Lifetime >

Infants
(4mth~71mth)

Screening for Infants

- *7 times until the children start school*
- *Basic medical exam, questionnaire and diagnosis*
- Developmental evaluation and consultation
- Health education for parents

Youth
(6~18 yrs)

Screening for Students

- Students in primary, middle and high school
- Basic medical exam
- Pathology exam
- Dental check

Health Screening For Out-of-School Children
- Out-of-School Children (9~24 yrs)

Adults
(over 19 yrs)

General Screening
(NCDs focused)

- Basic medical exam and health questionnaire
- Breast radiography check
- Urine and blood test
- Dental check

Cancer Screening

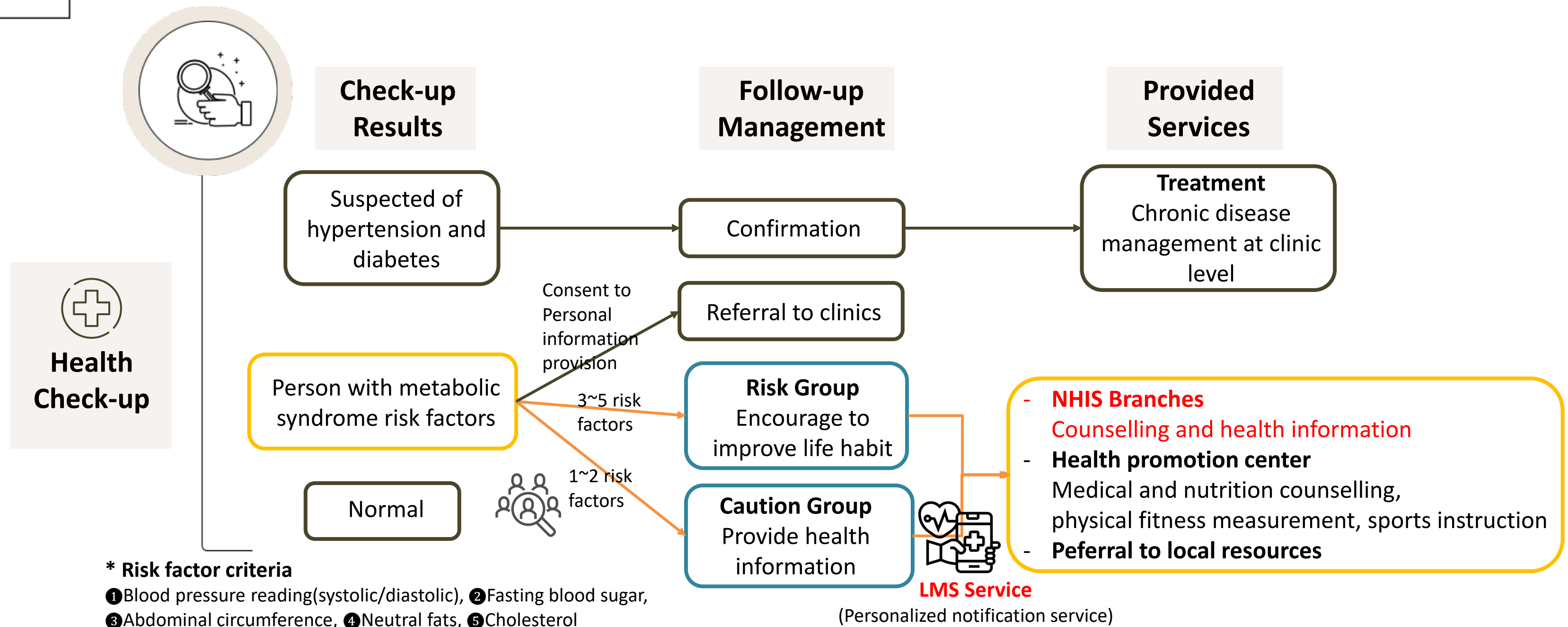- Stomach, liver, colorectal, breast and cervical cancer

< Cancer >

Category	Screening Age	Screening Period
Gastric	Men and Women over the age of 40	2 years
Liver	Men and Women at high risk who are over the age of 40	1 year
Colon	Men and Women over the age of 50	1 year
Breast	Women over the age of 40	2 years
Cervical	Women over the age of 20	2 years

< Cost payment >

▶ For regular cancer check-up : co-payment 10%

(except Cervical patients pay none)

2 Follow-Up Management

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Health Check-up

Check-up Results

Follow-up Management

Provided Services

Suspected of hypertension and diabetes → Confirmation → **Treatment** Chronic disease management at clinic level

Person with metabolic syndrome risk factors

- Consent to Personal information provision → Referral to clinics

- 3~5 risk factors → **Risk Group** Encourage to improve life habit

- 1~2 risk factors → **Caution Group** Provide health information

Normal

LMS Service
(Personalized notification service)

- **NHIS Branches** Counselling and health information
- **Health promotion center** Medical and nutrition counselling, physical fitness measurement, sports instruction
- **Peferral to local resources**

* Risk factor criteria
❶Blood pressure reading(systolic/diastolic), ❷Fasting blood sugar, ❸Abdominal circumference, ❹Neutral fats, ❺Cholesterol

2 National Health Check-up & Post-Examination Management

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※ **Website: http://www.nhis.or.kr/nhis/healthin**

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민원서비스 ∨   건강모아 ∧   정책·제도 ∨   정보공개 ∨   국민소통·참여 ∨   공단소개 ∨

나의 건강관리

가족 건강관리

건강 프로그램

건강 자료실

건강 새소식

검진기관/병원찾기

비급여 정보 포털(새창) ⧉

My Health Management ＞

· 국가건강검진정보

National Health Check-Up information

· 나의 의료이용 정보

My Medical Service Usage Information

· 검진현황과 건강예측

Health Check-Up Status and Health Prediction

· 나의 건강실천

My Health Practices

2

Post-Examination Management: Mobile Application

The건강보험

※ Mobile application

Primary Care Based NCDs Management System: Process of Service Provision

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Registration	Establishment of Care Plans	Patient Care	Check & Evaluation
	Doctors	Doctors or Care Coordinators	Doctors

Application for participation

20 or more local clinics

Local doctors' association

NHIS | Pubic health centers | Private clinics

Participation of subjects

Recruitment of participants

⌄

Guidelines for participation

Comprehensive Evaluation

Interview Examination
⌄
Physical Examination
⌄
Clinical Tests

Establishment of care plans for individual

- In-house treatment F/U
- Patient monitoring
- Doctors-coordinators collaboration activities
- Service connection/coordination
- Consultation
- Education

Doctors-coordinators collaboration activities

- **Twice a year, patient care check-up and evaluation**
- **Preparation of patient care records**

Yearly provision of service

1 Primary Care Based NCDs Management System: Care Coordinator Model

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• **(New)** Care plan establishment
• **(F/U)** Check details patient care plans, check for possible patient complications

• **(New patients)** Interview examination, physical examinations, lifestyle survey, etc.

• **(Enrolled patients)** Check records for blood pressure and blood sugar levels at home, check compliance with medicines, check degree of care plan implementations, etc.

Patient

In-house treatment Follow Up

Doctor

Activities before treatment
Patient care activities

APP WEB

Collaborative activities
doctors and coordinators

Care Coordinator

Records of patient care status

Qualifications of Care Coordinators

Nurses & Nutritionists
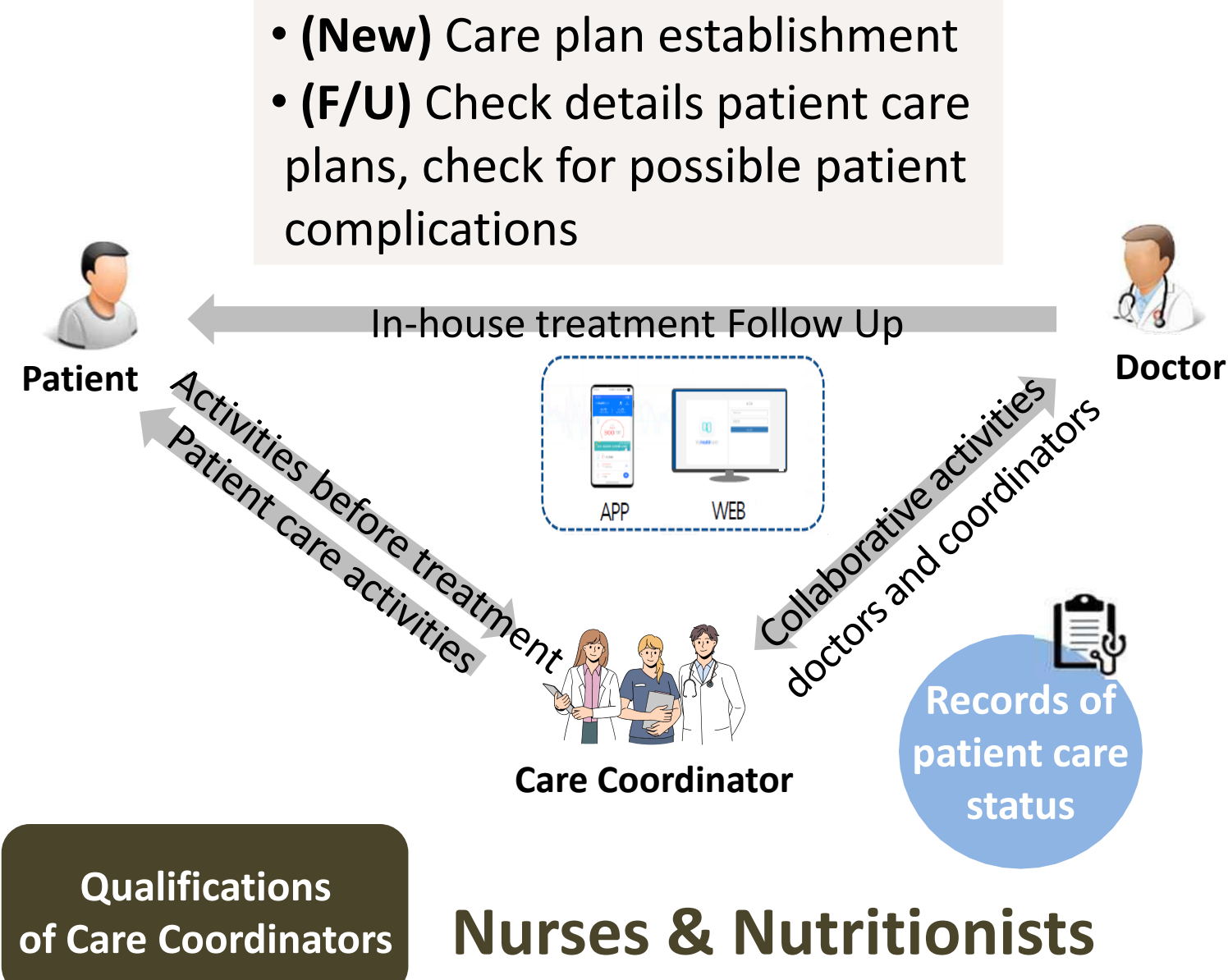
※ Patient care activities

1. Blood sugar/pressure monitoring
2. Medicine adherence monitoring
3. Check lifestyle execution
4. Guide for visit schedule(recall)
5. Check-up for complications
6. Education
7. Consultation
8. Resource Linkage

2 Personalized NCDs Management System: Customized Self-Care Suppot Services

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- Tailored health information for patients
- Individual health counseling services

Personalized Information Delivery
(Health logbook)

+

Rental of Self-Monitoring Devices
(Including user training)

+

LMS Service
(Personalized notification service)

+

Appropriate Medication Management

2 Personalized NCDs Management System: Customized Self-Care Suppot Services

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< NCDs Management Support Services >

❶ **(Objective)** Improving self-care capabilities of patients with hypertension and diabetes

❷ **(Targets)** Applicants Patients for primary care based NCDs Management Services

❸ Providing customized self-care support services
 - Tailored health information for patients / Individual health counseling services

❹ IT based NCDs Management Support
 - Providing LMS service: Customized health information services based on basic health behavior survey results
 - Online Health information portal(www.nhis.or.kr)
 - Home Monitoring Device Rental Services
 ◦ Rental of blood pressure and blood glucose monitors
 ◦ Provision of consumables (e.g., test strips, lancets)
 ◦ Education on proper measurement techniques

All Patient-Measured Health Data Collected by NHID

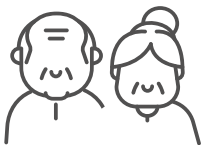# 2 Personalized NCDs Management System: Customized Self-Care Suppot Services

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< Self-blood glucose monitor >

< Self-blood pressure monitor >

3 Polypharmarcy Management:
Polypharmacy Management Services

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Target groups

1. **Patients from long-term care facility**
2. **Patients with one or more NCDs, and regularly taking 10 or more medications**
3. **Patients taking high-risk medications**

Selection	**Participant Selection using Big Data** -> Sending information letters -> Obtaining consent-> Proceeding with the intervention
Community Based Model	Home visits by Health Professionals(doctor, pharmacist, nurse), or Pharmacy visits by the patients
LTC Facility Model	Comprehensive medication review & adjustment through interdisciplinary collaboration by doctor-pharmacist-nurses
Participants	132 communities, 60 hospital, 3796 patients as of 2024

3 **Polypharmarcy Management:**
Community Based Polypharmacy Management

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Insurance Service

	1st service	2nd	3rd	4th
Type	Home-visit or Pharmacy visit	Telephone consultation or Pharmacy visit	Telephone consultation or Pharmacy visit	Home-visit or pharmacy visit
Service	Medication consultation	Monitoring, consultation	Monitoring, consultation	Evaluation
Consul-tation	Consultant Pharmacist+ NHIS staff or Assistant Personnel (2 persons per 1 team)	Consultant Pharmacist	Consultant Pharmacist	Consultant Pharmacist+ NHIS staff or Assistant Personnel (2 persons per 1 team)

Summary

1. Increase of NCDs Patients due to Population Aging
   - Higher prevalence and risk among the elderly
   - Leads to rising social and economic burden

2. NCDs Management Systems by NHIS
   - National Health Check-up and Follow up Service
   - Primary Care based NCDs Management Service
   - NCDs Management Support Services
   - Polypharmacy Management Service

3. All NCDs related health data is integrated into NHID

4. Customized Health Management Enabled by NHIS Big Data
   - NHIS big data allows for personalized health support services
   - Data-driven approach enhances efficiency and targeting

THANK YOU!

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WHO Collaborating Centre for
Health Insurance Governance and Services

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