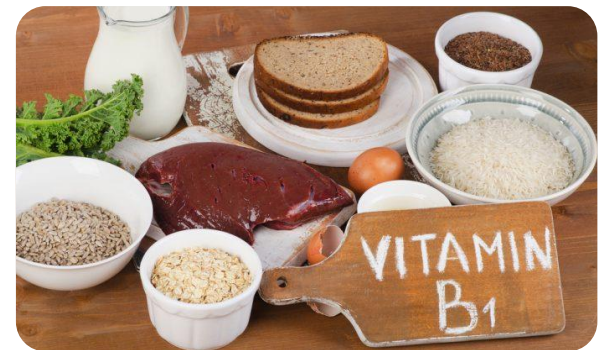


# Thiamine Deficiency Disorder Control & Prevention Program in Thailand

Dr. Bancha Kakhong, Deputy Director General  
Dr. Saipin Chotivichien, Director, Bureau of Nutrition  
Department of Health (DOH)  
Ministry of Public Health (MoPH), Thailand





กรมอนามัย  
DEPARTMENT OF HEALTH



## Thailand Demographics



- Area 513,120 km<sup>2</sup>
- Population 69 million
- Capital Bangkok
- Religion 95% Buddhism
- GDP in 2018 USD 504.99 billion
- GDP per Capita 7,605.8 USD
- Coverage of Health Insurance (2018) 99.9%
- Life Expectancy at Birth (2016) Male 72 Y / Female 79 Y
- Current Health Expenditure per Capita USD 221.92
- Current Health Expenditure % of GDP 3.71%



กรมอนามัย  
Department of Health Promotion

# Thiamine Deficiency Disorder (TDD) Situation in Thailand

- **Low incidence of Thiamine deficiency** disorder in Thailand / sporadic cases in specific groups, e.g. fishing crew, prisoners and laborers in factories
- **Thiamine consumption is adequate** among Thai population across all parts of the country \*
- **Thai primary healthcare services and system are in place, and people can easily access** to these services including lab investigations for detecting Thiamine deficiency
- **To prevent micronutrient deficiency** among all age groups, the DOH promotes healthy eating for Thais by using Nutrition Flag, FBDGs and other policies, such as the Miracle of the First 1,000 Days

---

\* **Source:** Tontisirin K *et al* 2014

# Preliminary Estimates of TDD in Thailand

## Published Thai Studies Indicative of Thiamine Deficiency

Year	Province	Class / Category	Total No. of Cases		
			Reported Cases	Reported Deaths	Total
<b>APR. 2005</b>	Samut Sakhon	Fishing crew	11	2	13
<b>JUL. 2006</b>	Samut Sakhon	Fishing crew	22	28	50
<b>NOV. 2011</b>	Bangkok	Prisoners	11	4	15
<b>JUL. 2013</b>	Chachoengsao	Industry workers	17	3	20
<b>DEC. 2014</b>	Northeast Thailand	Prisoners	79	28	107
<b>JAN. 2016</b>	Samut Prakarn	Fishing crew	9 (Thai – 8, Cambodia – 1)	2 (Thai)	11
<b>JAN. 2016</b>	Ranong	Fishing crew	26 (Thai – 7, Cambodia – 19)	6 (Thai – 1, Cambodia – 5)	32

## Available Surveys

- **Food Balance Sheet** is compiled every year. Thailand FBS is available. (the last update was done in 2017)

**Source:** <http://www.fao.org/faostat/en/#data/FBS>

- **Thiamine Intake or Biomarker Assessments**
  - **Info on Thiamine intake is available. Thiamine content in 100 gm edible portion** → Bureau of Nutrition



- **Biomarker Assessment** → Large public / private hospitals can do.
  - Erythrocyte transketolase activity (ETK)
  - Thiamine pyrophosphate effect (TPPE)

**Source:** Narumon D *et al.* Prevalence of and factors associated with thiamin deficiency in obese Thai children. *Asia Pac J Clin Nutr* 2019; 28(1): 116-121.  
 Doung-ngern *et al.* Beriberi outbreak among commercial fishermen, Thailand 2005. *Southeast Asian J Trop Med Public Health*. 2007; 38:130-5.

## Available Surveys

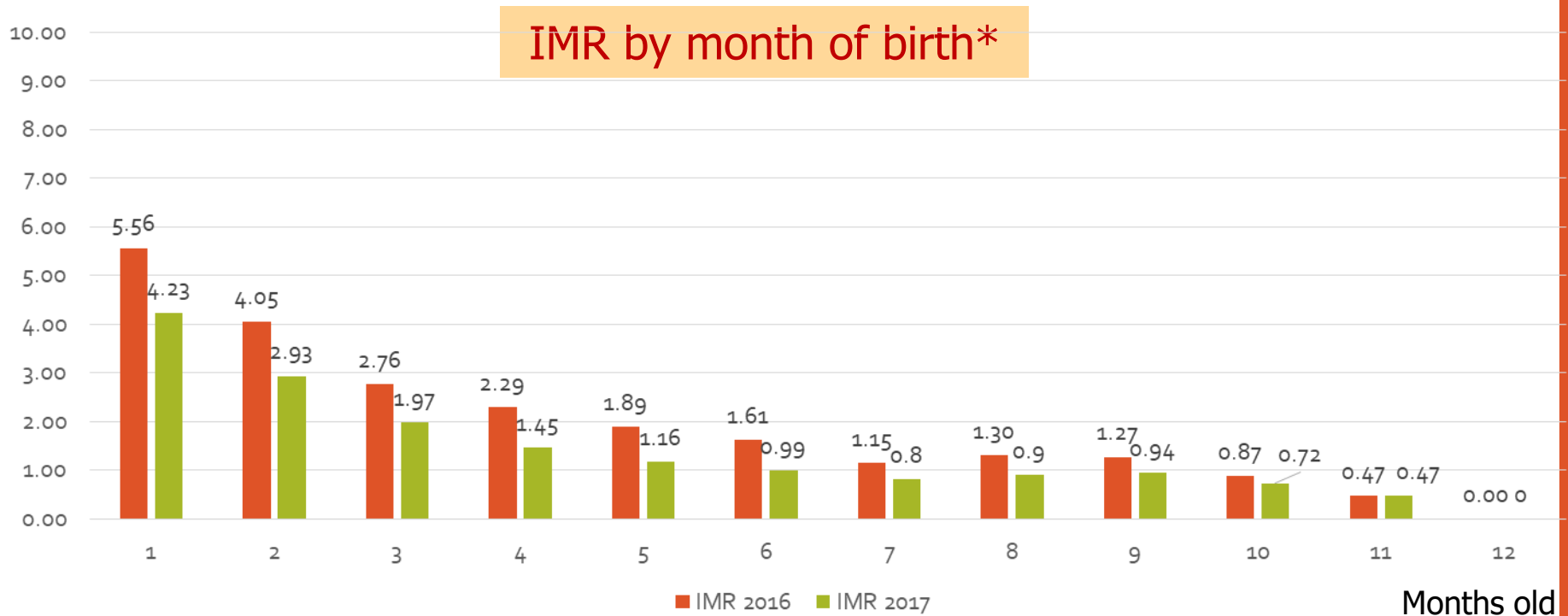
### National representative nutrition surveys which provide information on thiamine intake (estimates of thiamine intake by dietary assessment)

- **Food Consumption Survey** was conducted by National Bureau of Agricultural Commodity and Food Standards, Ministry of Agriculture and Cooperative (the latest survey was done in 2016)
- **National Health Examination Survey** was conducted by National Health Examination Survey Office, Health System Research Institute (the latest survey was conducted in 2008-2009)
- **Household Consumption and Expenditure Survey**
  - Thailand's Annual Household Expenditure per Capita data is updated each year
  - Information on an average household expenditure in 7-day period for food, beverages and tobacco is available

**Source:** <http://www.nso.go.th/sites/2014en/Pages/survey/Social/Household-Income-and-expenditures.aspx>  
<https://www.ceicdata.com/en/indicator/thailand/annual-household-expenditure-per-capita>

## Available Surveys

- Infant mortality data analyzed by month of infant's birth



**Source:** \*Health Data Center, MoPH, 15 Nov., 2017

## Available Surveys

- Existing Surveillance Data on TDDs

>>> In Process



The Division of  
Occupational and  
Environmental  
Disease, Department  
of Disease Control

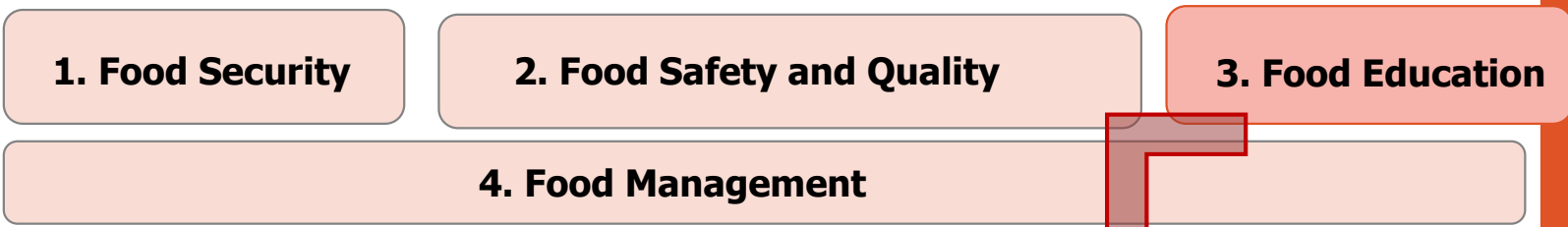
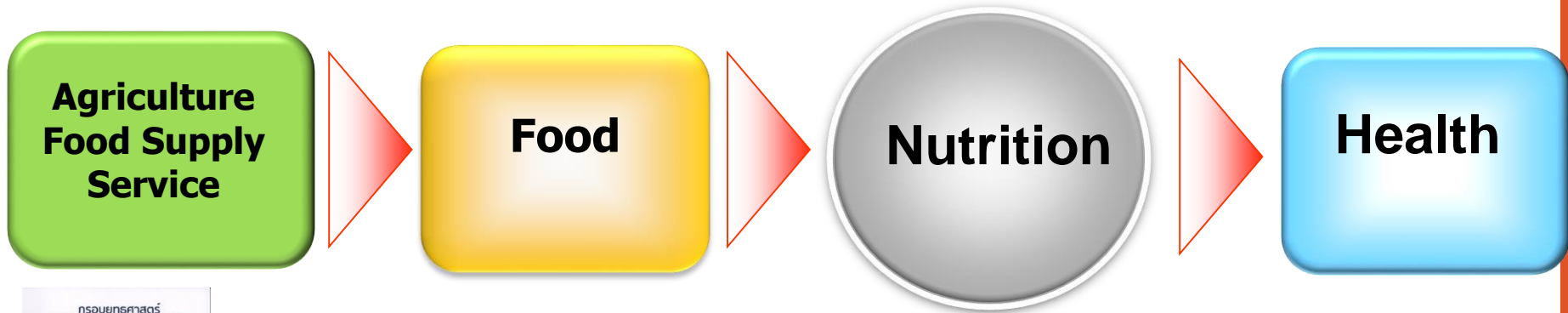


- Setting up a reporting system
- To monitor Thiamine Deficiency in risk groups (e.g. fishing crew)
- In 5 provinces
- Pilot Program



# Policy Environment

## The 2<sup>nd</sup> Strategic Framework for Food Management (SFFM), 2019-2037



**The 2<sup>nd</sup> National Reproductive Health Development Policy and Strategy, 2017-2026**

**The 5-year National Plans of Action for Nutrition, 2019-2023**

# The 5-Year National Plans of Action For Nutrition, 2019-2023



กรมอนามัย  
DEPARTMENT OF HEALTH

## Plan No. 1

**Develop and manage knowledge about food and nutrition, to equip all groups of people with sustainable and proper behaviors**

- Scope and topic of main knowledge/guideline on healthy eating for better health of Thai people
- Indicators of food and nutrition, based on age groups

## Plan No. 2

**Proactively integrate food education in all food chains, for well-being of the people and reduce malnutrition in all age groups**

- Establish collaboration and formulate policies/measures/laws on food and nutrition
- Protect and allow people to access food for improved nutrition

## Plan No. 3

**Create collaboration to link national food and nutrition databases (Big Data System)**

- Link food and nutrition databases and nutritional value of food in the country
- Food and nutrition surveillance system

## Expected Outcomes in 2023



**Global Nutrition Targets**



**9 Voluntary Global Targets**

**People adopt desirable behavior in consuming healthy food**

**Reduce Undernutrition**

**No increase Overnutrition**

**Big Data System**

# Programmatic Environment

## Fortification

- **“Fortifiable” Food Products Commonly Available and Consumed**

### Mandatory

**Vitamin A:** Condensed milk  
**Iodine:** Salt, fish sauce, soy sauce and salt brine

### Voluntary

**Vitamin B1**  
**Vitamin B2** Fortified rice  
**Vitamin B3**

“Thiamine Fortified Rice” is defined as thiamine content not less than 0.4 mg in 100 gm of pre-cooked rice (or 26.67% Thai RDI)

**Source:** Notification of the Ministry of Public Health No. 150 (1993)

- **Degree of Centralization in The Production of Each Food**  
Food production process is decentralized and supervised by provincial health offices.
- **National Equipment for Fortification of Foods (public or private)**
  - In case of Thiamine, equipment to fortify rice is not provided by national authority, because vitamin fortification of rice or other kind of food is not difficult.
  - Almost all manufacturers are private and they can afford to use mixing machine or vitamin sprayer with hot air current etc.

# Programmatic Environment

## Supplementation

Products	Target Group	Frequency	*Current Coverage	<b>UHC</b> ----- <b>(Universal Health Coverage)</b>
<b>Feroferlic</b> (Iron and folic)	Women of reproductive age (3 months before planning pregnancy)	Weekly	-	
<b>Triferdine</b> (Iodine, iron and folic acid)	Pregnant	Daily	77.06%	
<b>Tablet</b> (Iodine, iron and folic acid)	Lactating women (until 6 months)	Daily	-	
<b>Iron Syrup</b>	Children (6 months – 5 years)	Weekly	47.55%	
<b>Iron Tablet</b>	School age children (5 – 14 years)	Weekly	21.71%	



**Feroferlic**  
(Iodine and Iron)



**Triferdine**  
(Iodine, Iron and Folic Acid)

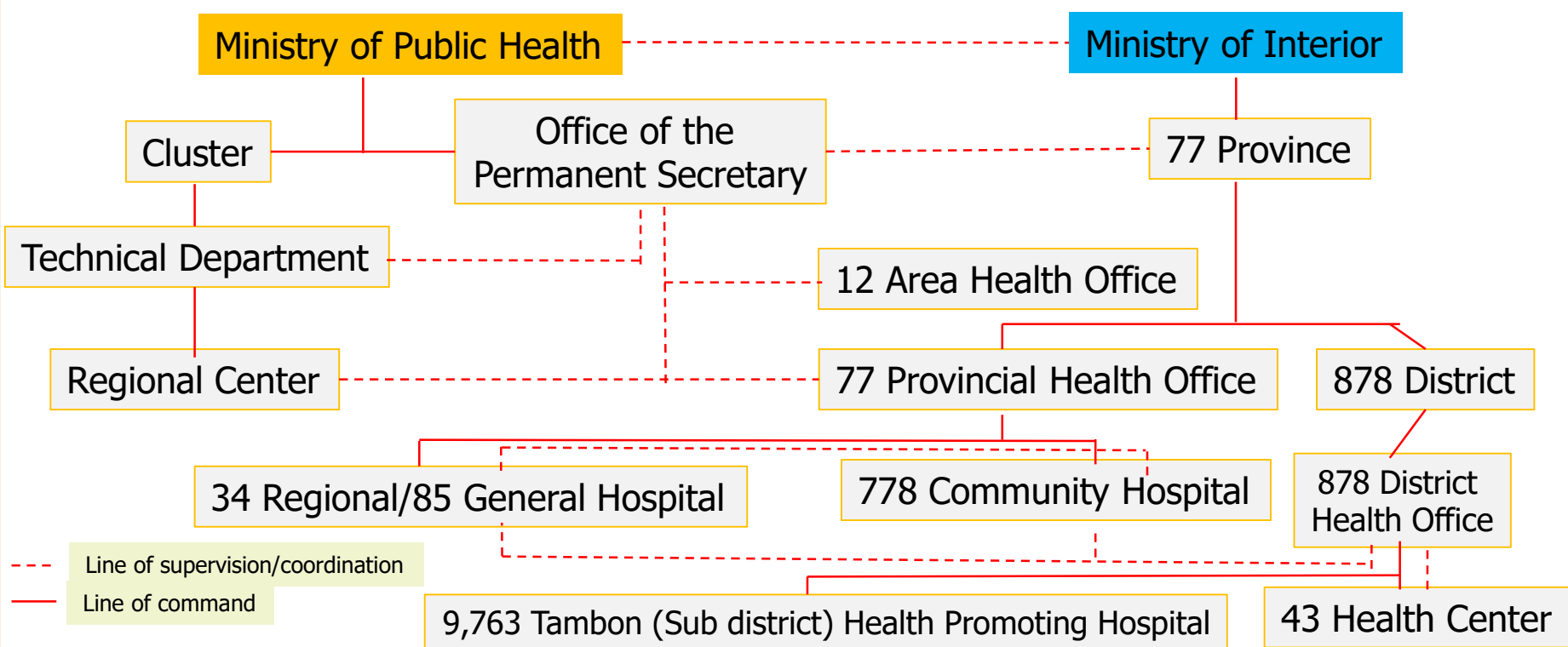
**Source:** \*Health Data Center, MoPH, 14 Nov., 2019

# National Health System Infrastructure

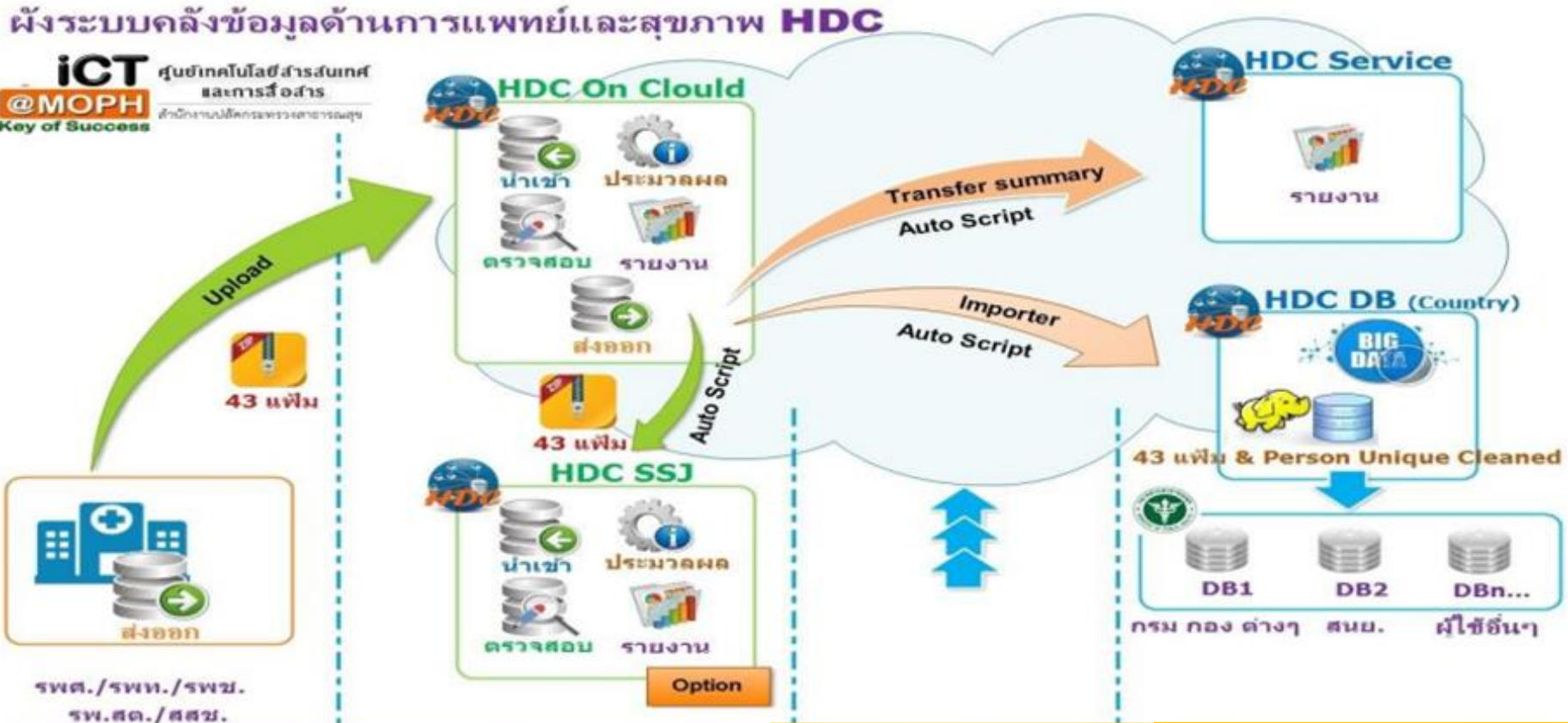
## Decentralization Structure

Health promoting hospital at sub-district level >>> District level hospital >>> Provincial hospital >>> Health Data Center (HDC / MOPH)

### Organization Chart of The Provincial Public Health Administration



# Data Collection From Existing Sources



Health Care Services 77 Provincial Health Offices 12 Area Health Offices Ministry of Public Health





กรมอนามัย  
DEPARTMENT OF HEALTH

# Thank You For Your Attention

