

Health care Innovation:

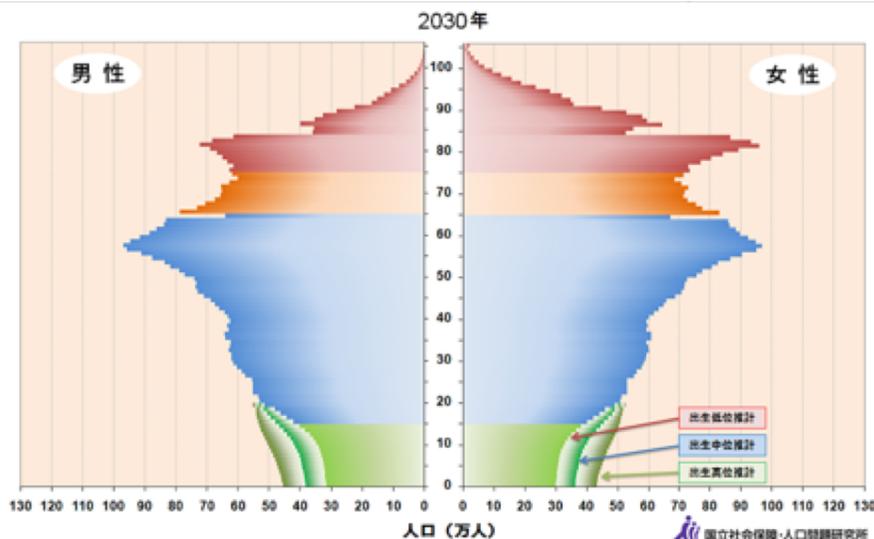
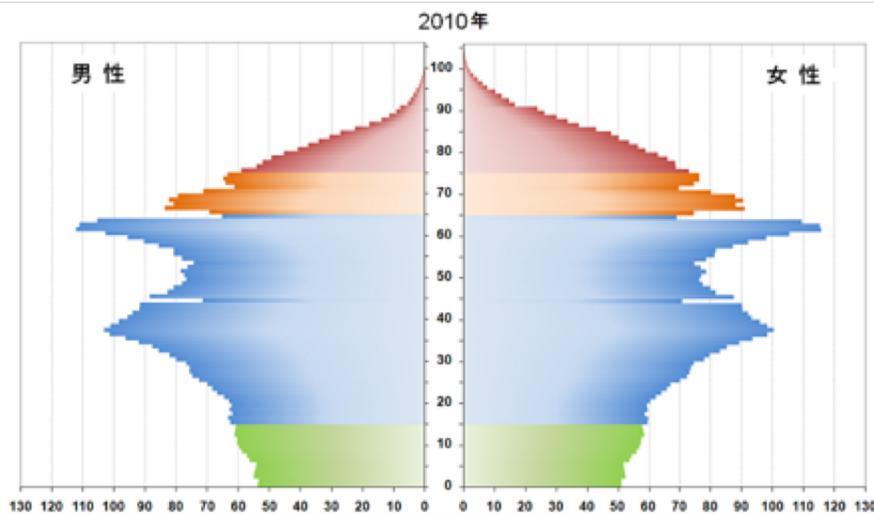
New Technologies and Effective Evaluation

Professor of Health Policy and Management, **Keio University**
Professor of Healthcare Quality Assessment, **The University of Tokyo**
Director of Global Health Systems and Innovation, **National Center for Global Health and Medicine**

Hiroaki MIYATA



An era of falling birthrates, an aging society, and a shrinking population



資料：1920～2010年：国勢調査、推計人口、2011年以降：「日本の将来推計人口（平成24年1月推計）」。

国立社会保障・人口問題研究所

It is predicted that by 2030, Japan's aging rate will rise to 31.8%, indicating that one out of three Japanese will be a senior citizen aged 65 or older, and that the figure will top the 40% mark to reach 40.5% in 2055.

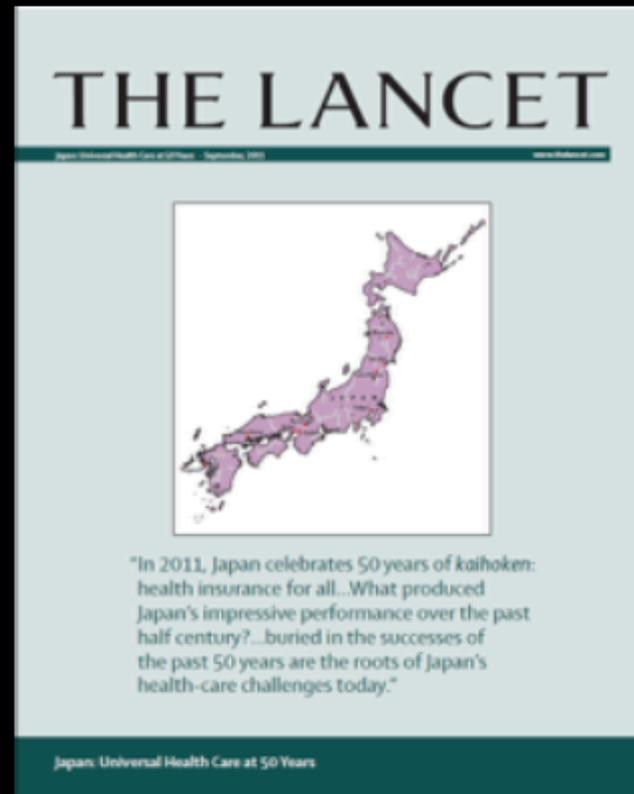
On the other hand, there are expectations for 5-10 years growth of health care sector from the standpoints of economic growth and employment expansion.

"Japan: a mirror for our future"

"The success of Japan's health system matters not only because of its importance to Japanese citizens, but also because Japan is a barometer of western health..."

"The country now seeks to marshal its considerable resources to claim its rightful place globally, as well as to improve its policy making domestically."

Source: Horton R. Lancet 2010



Issues and outlook

- Address growing health care needs, changing social environments and values, increasing inequity, and globalization
- Transform health care into a horizontal system that engages all sectors through shared vision and values, in contrast to maintaining the current system through basic cost share increases and benefits cuts
- Promote innovation in health care technologies and systems that drives Japan's growth and development while maintaining excellence in health
- Tackle fiscal deficits and contribute to Japan's economic stability
- Position Japan as the authority on healthy longevity by addressing population ageing and a low birthrate

Paradigm shift

Existing model

Quantity

Inputs

Regulation

Cure

Fragmentation

Toward 2035

Quality

Value

Autonomy

Care

Integration



HISTORICAL LINEAGE

1. Japan Cardiovascular Surgery Database (JCVSD)

- 2000— Adult Cardiovascular Surgery
- 2008— Congenital Heart Surgery

2. Gastroenterological Surgery Database 2008—

3. General Surgery 2009—

Japan Surgical Society and 10 related Academic Society prepared to launch Integrated clinical database

4. 2010—

Based on professional collaboration,

National Clinical Database(NCD) was founded



外科専門医制度と連携したデータベース事業がはじまります

今後、各種専門医の更新にはNCDに登録された症例データが必要になります。

NCDの事業活動について

- 外科関連の専門医のあり方を考えるための共通基盤構築
- 医療水準の把握と改善に向けた取り組みの支援
- 患者さんのための最善の医療を提供するための政策提言
- 領域の垣根を越えた学会間の連携



外科関連の専門医制度データベースが統一されることで、1症例につき一度の手術（症例）登録のみで複数の専門医制度への登録を行うことが可能となります。登録開始は、2011年1月1日（手術日）の症例からの予定です。

ホームページアドレス <http://www.ncd-core.jp/>

一般社団法人
National Clinical Database (NCD) 2010年4月8日 設立

Current Status

Over **5,000 Participant hospital** in JAPAN

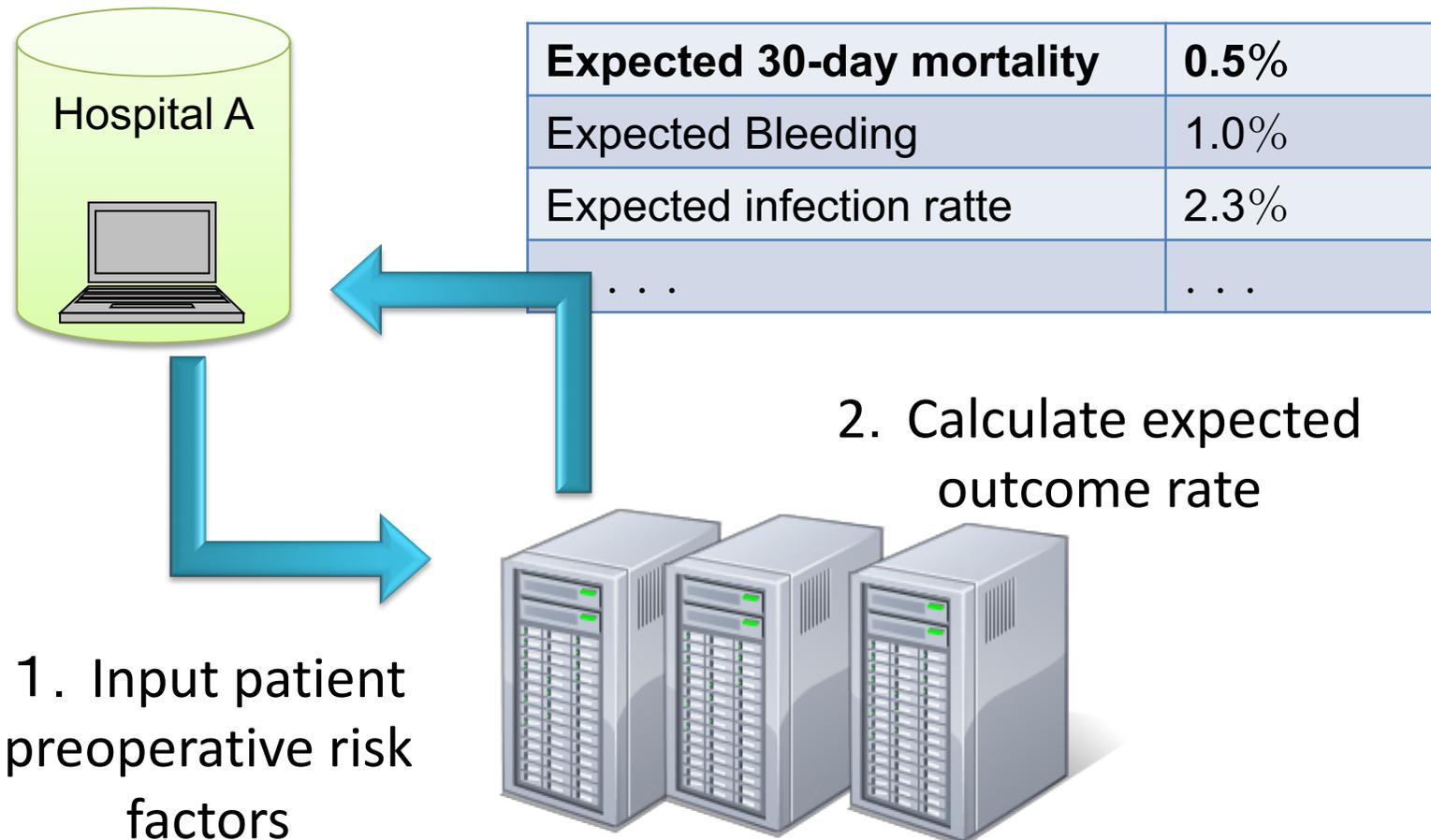
Registered programs > 7,000



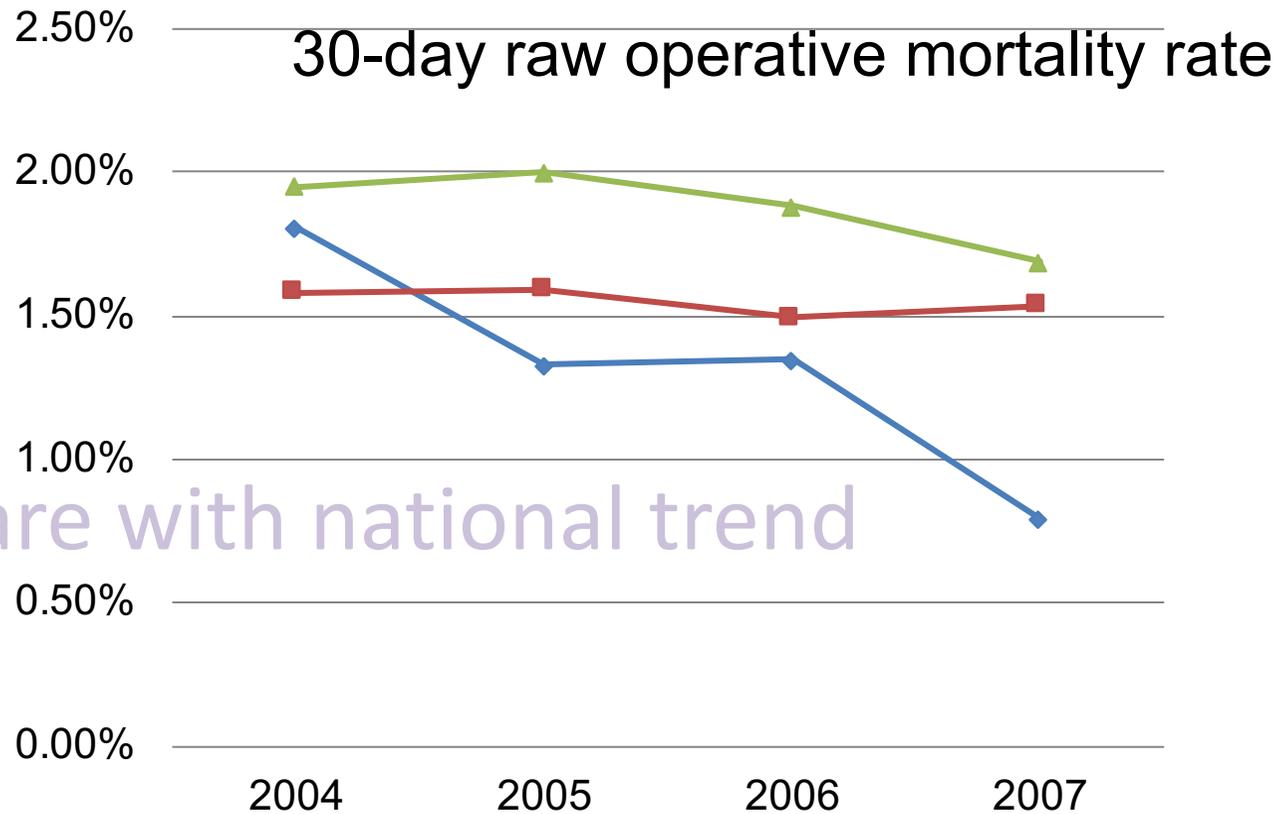
**One of the Largest Clinical Database linked with
Board Certification System**

Real time feedback for each clinical practice

Based on each outcome risk models, participant hospital can receive expected outcome rates for each patients. They can use such data not only for clinical discussion, but also for informed consent.



Quality improvement as a whole nation



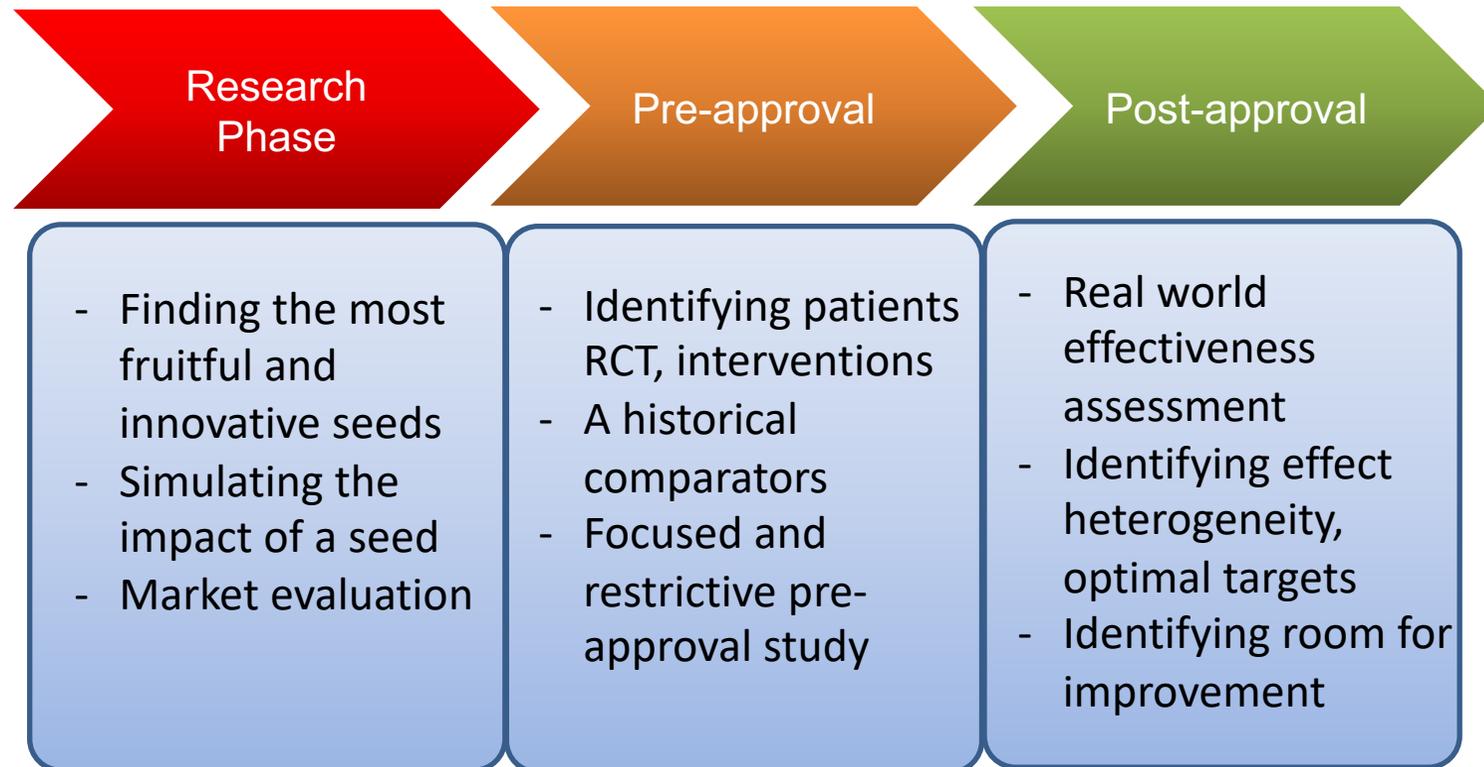
Compare with national trend

- ◆ initial JCVSD participants (n=44)
- halfway JCVSD participants during 2005-2007 (n=87)
- ▲ National trend in Japan (n=222)

Next issue for quality improvement

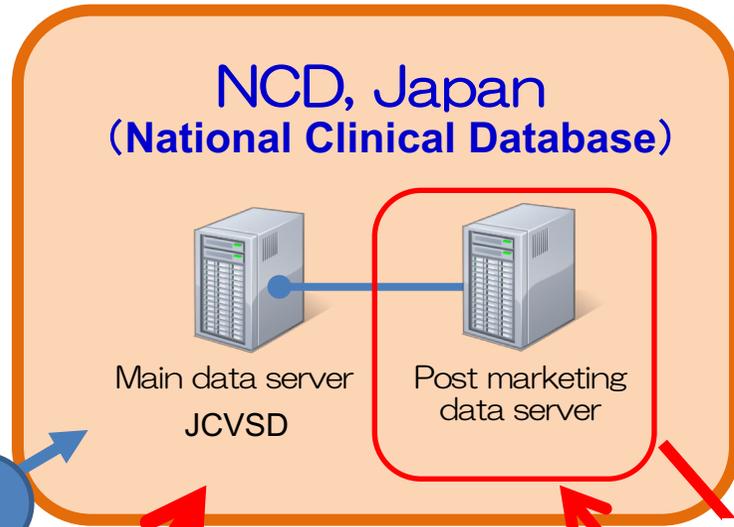
	US / NSQIP (2011-2012)	Japan / NCD (2011-2012)
PD (Pancreatoduodenectomy)	Total = 5182 Died(%)=2.57%	Total =15527 Died(%)=1.35%
Length of stay	Median (IQR)	Median (IQR)
Total	9(7-14)	31(22-43)
Survived	9(7-14)	31(22-43)
Died	11(6-17)	17(15-24)
LAR (Lower Anterior Resection)	Total = 13989 (150; 1.07%)	Total = 37161 (163; 0.44%)
Length of stay	Median (IQR)	Median (IQR)
Total	6(4-8)	16(12-25)
Survived	6(4-8)	16(12-25)
Died	6(4-10)	10(6-20)
Right hemi-colectomy	Total = 31571 (1097; 3.47%)	Total = 38740 (464; 1.20%)
Length of stay	Median (IQR)	Median (IQR)
Total	5(4-7)	14(10-20)
Survived	5(4-7)	14(10-20)
Died	8(5-13)	15(6.25-22)

The New Era of Research and Development



The New R&D Platform has been generated by the Combination of Clinical practice network and systematic database

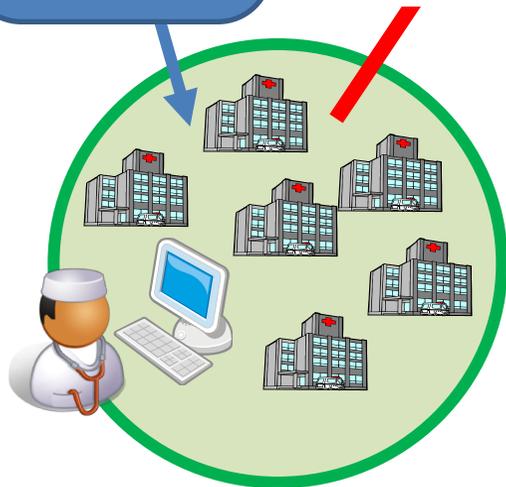
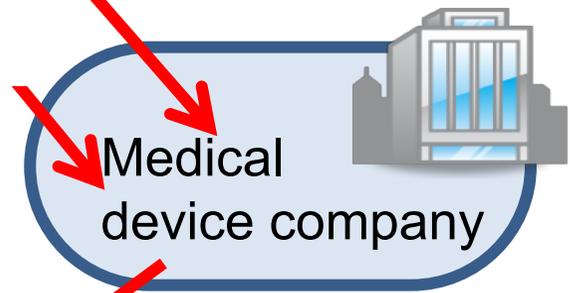
industry-
government-
academia
collaboration



Data registration
TAVR

Feedback TAVR
data

Quality and
safety check



nonconformity
report, application



When flu pandemic occurred 10 years ago...

When flu pandemic occurred in Japan 10 years ago, several people died after taking certain drug "TAMIFLU".

Because there was no database regarding this problem, nobody could answer the reason behind these cases.

"Is this problem of drug itself?"

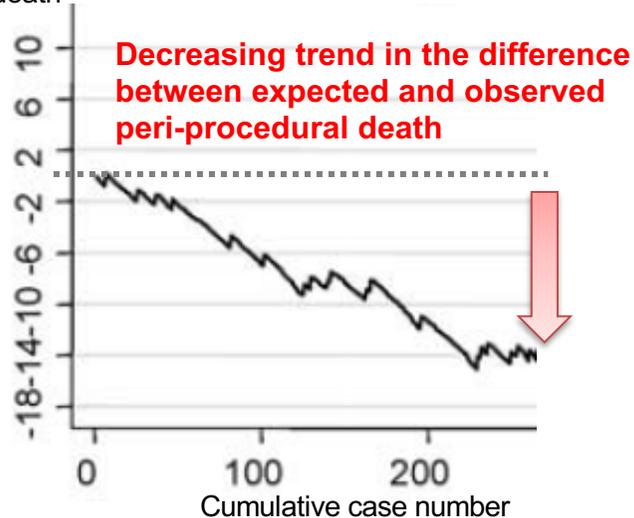
"Is this problem of doctors' prescription?"

"Were those patients just in severe condition?"

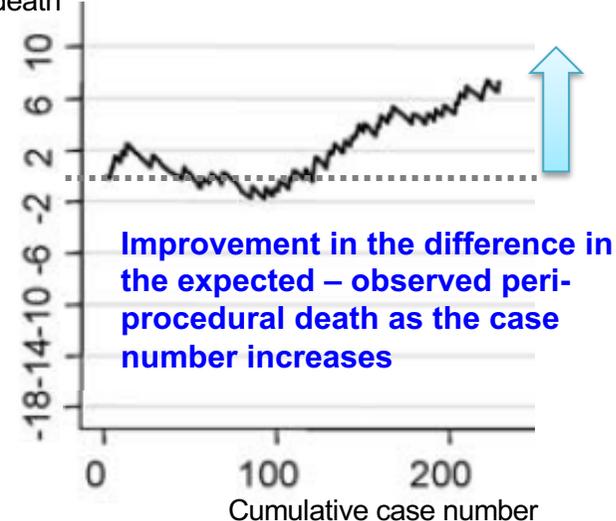
Monitoring of device related adverse events

We can monitor the performance of the procedures / devices and catch the early signals for major adverse events

Risk-adjusted Cumulative
expected - observed
death



Risk-adjusted Cumulative
expected - observed
death



Signal detection will lead to detailed investigation and evidence based warning generation to the clinicians in the field



1-866-OPDIVO-1

OPDIVO in other Indications >
For U.S. Healthcare Professionals >
[Questions to Ask Your Doctor](#) PDF

SIGN UP

This site is intended for U.S. residents 18 years of age or older.

MENU

What Is OPDIVO?

Is OPDIVO Right for You?

Getting an OPDIVO Infusion

Paying for OPDIVO

Patient Resources

PDF U.S. Full Prescribing Information | PDF Medication Guide | Full Indication

A CHANCE TO LIVE LONGER

If you have a type of advanced-stage lung cancer,

THIS IS BIG.

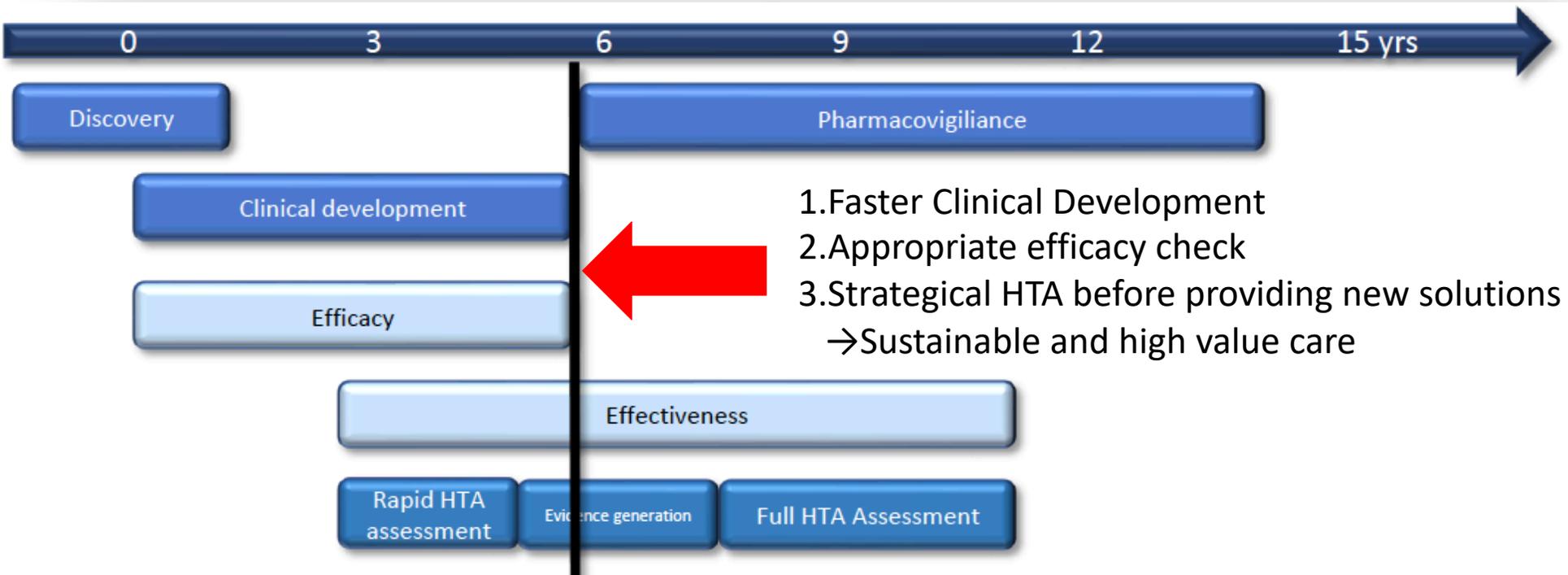


Watch the TV commercial

It is BIG step to overcome cancer,
however BIG budget is also required...
In Japan, it costs 350,000 USD per year for one patient.
(and will cost 17 billion USD for Japan)



The New Era of Research and Development

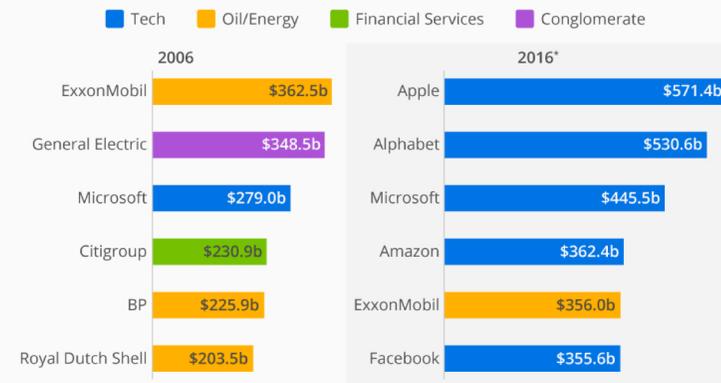


Era of Data-Driven Society



The Age of Tech

Market capitalization of the world's most valuable public companies



* as of August 1, 2016
@StatistaCharts Sources: Yahoo! Finance, Forbes

statista

信用中国
Credit China
信 | 誉 | 华 | 夏 | 传 | 承 | 经 | 典

用诚信点亮民族品牌 用影像记录信用中国

昵图网 www.nipic.com By:新印象广告 No:2018012216581002778355



The EU General Data Protection Regulation (GDPR) is the most important change in data privacy regulation in 20 years - we're here to make sure you're prepared.

2018 reform of EU data protection rules

Stronger rules on data protection mean people have more control over their personal data and businesses benefit from a level playing field.

VALUE CO-CREATION SOCIETY 価値共創社会 の理想

日本型

【アメリカ型】【EU型】【中国型】の強みを活かし、ボトムアップで多様かつ多元的な価値を共に創る基盤を構築する。あらゆる立場の人々がだれも取り残されることなく、その人らしく生きることができる社会を目指す。

経済主導型イノベーション



GDPR・データポータビリティデータを
所有財の延長で発想



トップダウンで一元的な社会信用システム



価値主導型イノベーション



共有財としての側面も考慮した
主体的選択 (Beyond GDPR)



ボトムアップで多様かつ多元的な
価値共有と社会信用システム



Speeches and Statements by the Prime Minister

Toward a New Era of “Hope-Driven Economy”: the Prime Minister's Keynote Speech at the World Economic Forum Annual Meeting

January 23, 2019

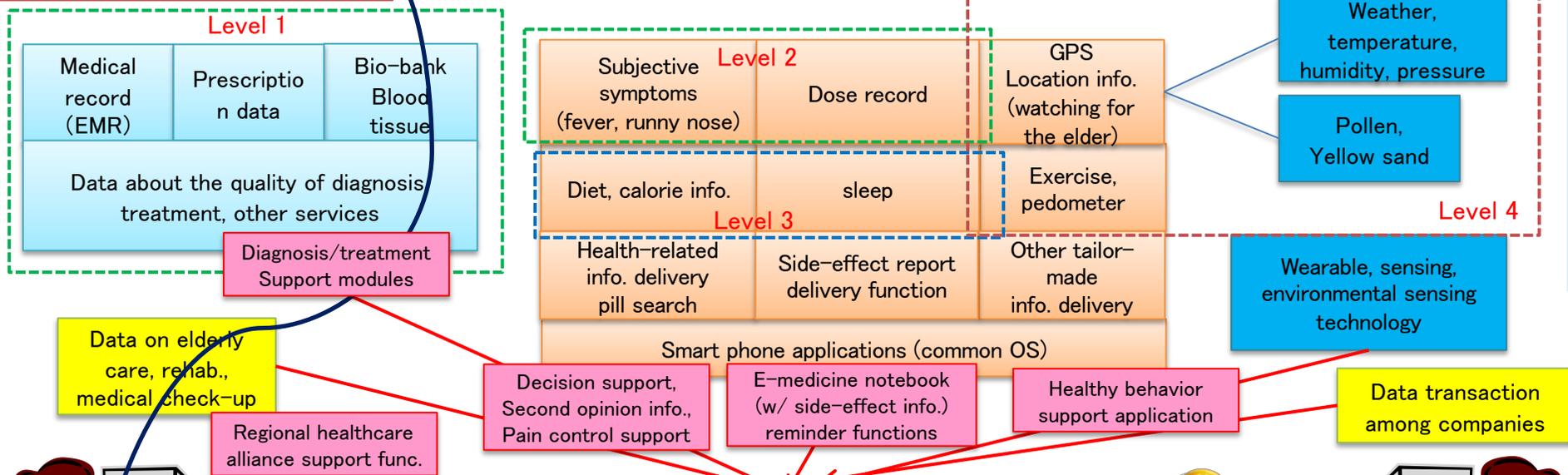


The regime we must build is one for D.F.F.T., Data Free Flow with Trust -- non-personal data, needless to say. It is not the big, capital intensive industries, but rather we individuals who will benefit from both the fourth industrial revolution and what we call “Society 5.0,” which this fourth industrial revolution will bring about.

In Society 5.0, it is no longer capital but data that connects and drives everything, helping to fill the gap between the rich and the less privileged. Services of medicine and education, from elementary to tertiary, will reach small villages in the Sub Saharan region. Girls who have given up going to school will see, beyond their own village, a wider horizon where the sky is the limit.

Person-centered open Platform

Sensitivity Level: 0: High - 4: Low



Individual

Consent to participate

- Basic info. registration
- Sex, date of birth
- Address, phone No. **Level 0**
- Income, household info. **Level 1**



Use of registered data
Setting disclosure level
To whom to show



Individual

Key for different disclosure levels



They can check a person's sensitive data according to disclosure levels if s/he gives a permission key to the professionals.



Registration procedure



Use of data

- Business use
- Public health
- Research **Corporations, government, academia**

Healthcare providers (doctors, dentists, Pharmacist etc.)



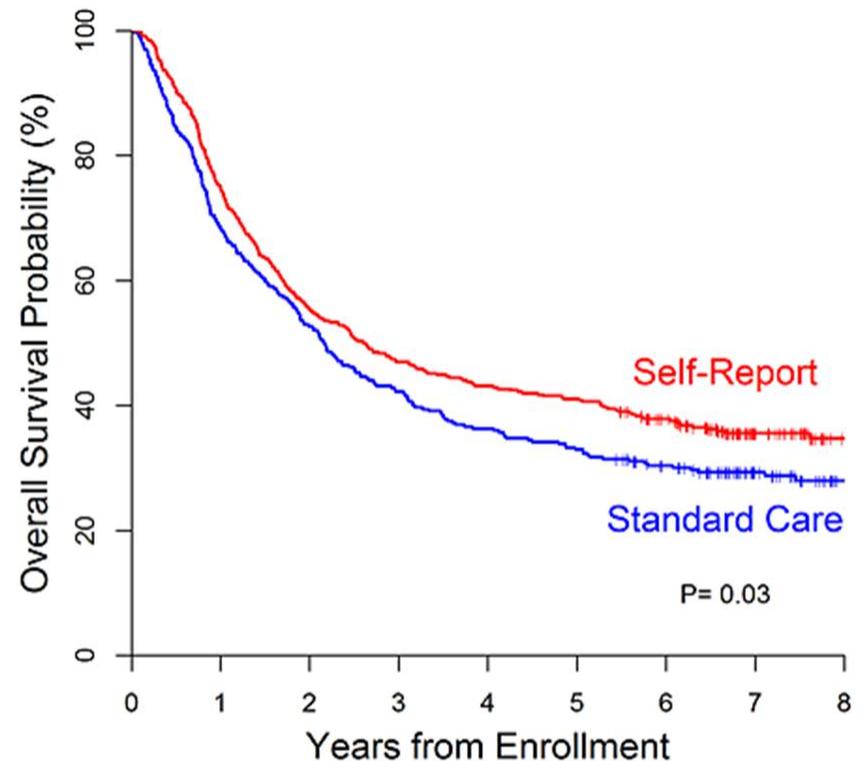
Create

Link

Utilize

Overall Survival

- Compared to standard care, median survival was 5 months longer among patients in the self-reporting arm (31.2 vs. 26.0 months) ($P=0.03$)
- Remained significant in multivariable analysis: Adjusted hazard ratio 0.832 (95% CI; 0.696, 0.995)



Total	766	554	415	344	308	288	237	115	60
Self-Report	441	331	244	207	190	181	148	65	33
Standard	325	223	171	137	118	107	89	50	27

PRESENTED AT: ASCO ANNUAL MEETING '17 | #ASCO17

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Presented by: Ethan Basch, MD



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FDA News Release

FDA permits marketing of mobile medical application for substance use disorder

[f](#) SHARE

[t](#) TWEET

[in](#) LINKEDIN

[p](#) PIN IT

[✉](#) EMAIL

[🖨](#) PRINT

**For Immediate
Release**

September 14, 2017

Release

Today, the U.S. Food and Drug Administration permitted marketing of the first mobile medical application to help treat substance use disorders (SUD). The Reset application is intended to be used with outpatient therapy to treat alcohol, cocaine, marijuana and stimulant SUDs. The application is not intended to be used to treat opioid dependence.

The level of care needed → What people can do?



In Japan, performance of home care has been evaluated by “the level of care needed”. Thus care giver tend to evaluate people more serious.

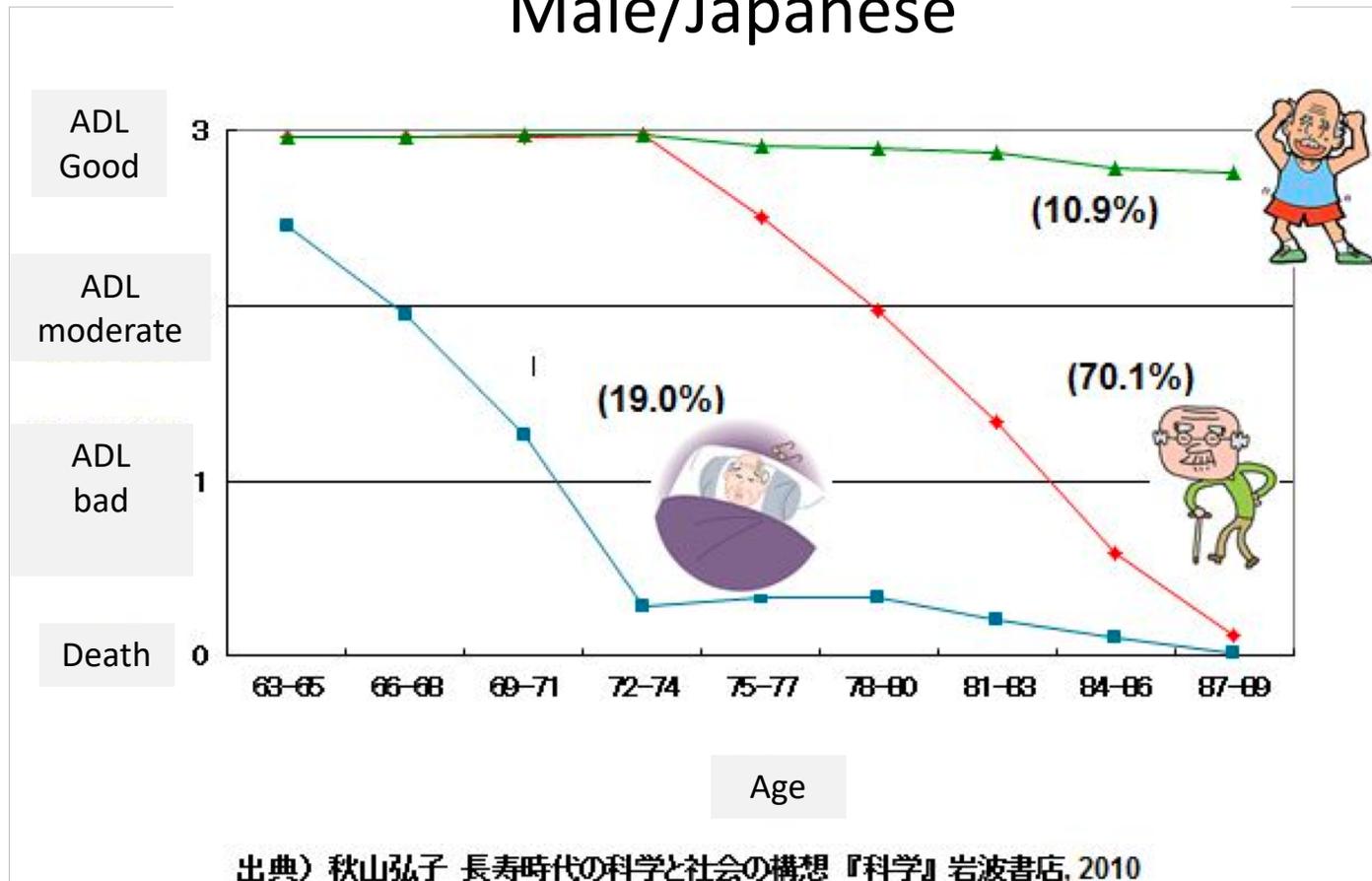


However, we can change evaluation into “what people can do?” by the IoT(environmental sensing technology).



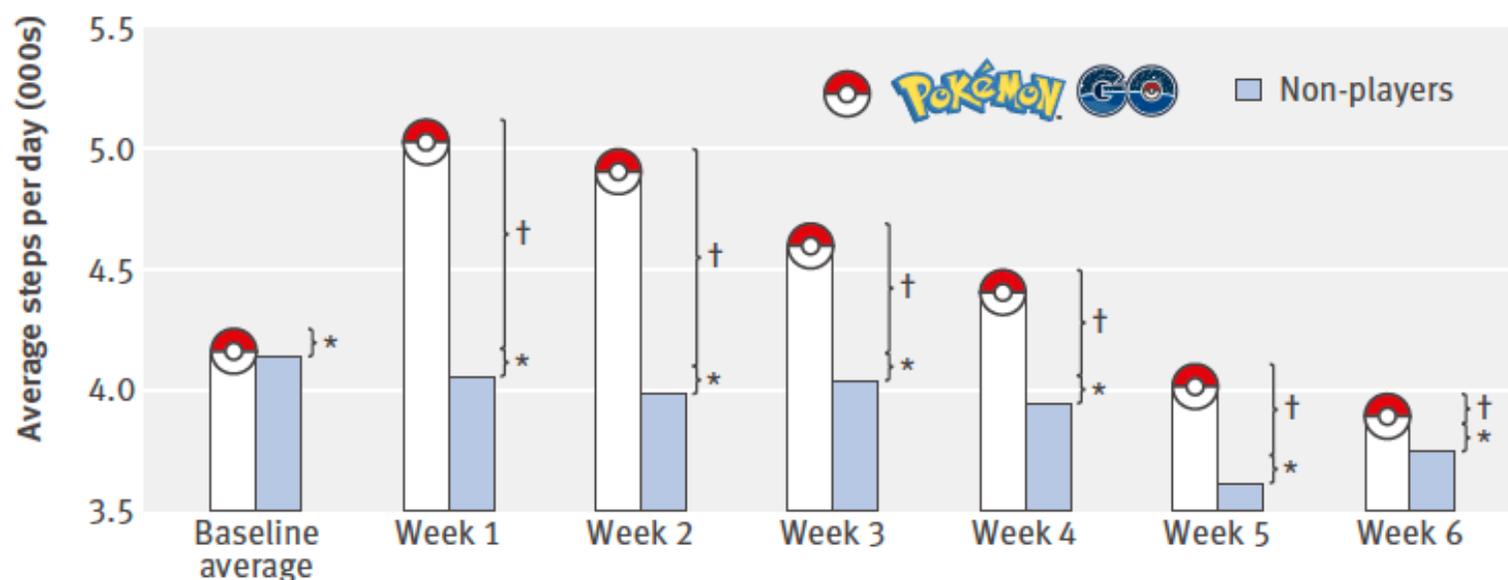
This innovation can achieve cost-reduction for assessment. In addition to that, It also can provide positive incentive to improve quality of care for care givers.

Course of Life 20 years follow up Male/Japanese



Gotta catch'em all! Pokémon GO and physical activity among young adults: difference in differences study

Katherine B Howe,^{1,2} Christian Suharlim,³ Peter Ueda,^{4,5} Daniel Howe, Ichiro Kawachi,² Eric B Rimm^{1,6,7}



* Baseline difference 4 week average	† Difference	† Difference	† Difference	† Difference	† Difference	† Difference
114 (-212 to 440)	955 (697 to 1213)	906 (647 to 1164)	544 (280 to 808)	446 (169 to 722)	381 (43 to 720)	130 (-593 to 853)

Transportation Service + IoT → Wellbeing Platform



Delivery drivers not only change a battery of home medicine dispenser, but also look after (and some time provide support for) each users by IoT data and central system assistances.



Based on big data analysis each drivers can know what is appropriate communication for each customers to confirm potential side effects, status of prescription, other risk symptoms... and so on.



When such kinds of face to face communication network meets IoT and big data analysis, it could be transformed into

wellbeing platform with high value service.

LIFE as VALUE

Not only disease management, but also wellbeing empowerment

Wellbeing Platform

人々のwellbeingを支えるあらゆる取り組みを対象に



Empower everyone

Pursue an active way of living and which lead to healthy life.

Inequity or illness does not always mean a burden on life

Community support

Possible to receive appropriate support based on scientific basis under a familiar environment

Rapidly cooperate to the best organization when a difficult judgment and advanced response is required

Value-based care

To provide the world's best treatment/diagnosis and care by having good cooperation among organizations

To provide customized treatment and care to individuals by combining global evidence and local real world data

Next Generation Universal Health Coverage

Past	Present	Next generation
Younger population	Older population	Leaving no one behind (Vulnerable and marginalized populations)
Communicable disease	Non communicable disease	Including pre-diagnosis phase and healthy life
Hospital-enclosed	Community-based	Person-centered (Anytime, anywhere through global alliance)