



Consideration on the Development of AI4H

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Broad Prospects of ICT Applications into Health Field

MAIN MODE

- Institutional information ;
- Regional information ;

MAIN TECHNIQUE

- Computer
- Broadband network
- Internet

1.0 ERA
MEDICAL
INFORMATIZATION

MAIN MODE

- Internet hospital
- mHealth

MAIN TECHNIQUE

- Wearable device
- 4G Network
- Cloud computing
- Big data

2.0 ERA
INTERNET
HEALTHCARE
(WIRELESS)

MAIN MODE

- Assisted diagnosis
- Telemedicine

MAIN TECHNIQUE

- Medical robot
- VR/AR
- 5G Network
- Artificial Intelligence

3.0 ERA
SMART
HEALTHCARE
(INTELLIGENT)



The Value of AI for Health

1. IMPROVE THE LEVEL OF DIAGNOSIS AND TREATMENT

It can effectively help doctors to improve diagnostic accuracy, reduce misdiagnosis and missed diagnosis by applying artificial intelligence to intelligent triage, medical image recognition, pathological diagnosis and other fields.

2. IMPROVE THE EFFICIENCY OF DIAGNOSIS AND TREATMENT

For the serious lack of medical personnel who work on imaging and pathology in primary medical institutions, it can greatly improve the ability of primary medical services by providing clinical auxiliary diagnosis such as early screening, diagnosis, rehabilitation and other evaluation scenarios with artificial intelligence .

3. PROMOTE HEALTH MANAGEMENT AND PRECISION MEDICINE

By monitoring user's personal health data through wearable devices, it provides more opportunity for personalized health management, behavioral intervention, disease risk prediction and control.

4. ACCELERATE THE DEVELOPMENT OF NEW DRUGS

Compared with long cycle of research and low success rate in traditional drug development process, it may greatly improve the efficiency of new drug development and reduce business costs in the combination of artificial intelligence and clinical trial simulation (CTS).



Possible Impact of AI for Health

CONSUMER RISK

- While artificial intelligence enhances consumer capabilities, it may also pass responsibility risks from doctors to consumers.

SOCIAL JUSTICE

- The data behind the artificial intelligence model may be biased in itself (eg lack of vulnerable population data)
- When applied to commercial insurance, it will increase the cost of high-risk groups.

MEDICAL ETHICS

- When applied to commercial insurance, it will increase the cost of high-risk groups.
- Challenges to medical core values such as confidentiality

What is FG-AI4H Focused on?



INDUSTRY

- Promote cross-domain communication of all aspects in the industry to enable top-tier medical research based on big data and AI solutions;
- Promote this new application mode in large scale.



REQUIREMENT

- Recognize various perspectives for the future of healthcare services involving AI;
- Identify opportunities and challenges in the standardization and application activities for AI for health.



EVALUATION

- With the innovation of deep learning algorithms, open benchmarks and assessment framework for evaluation and validation is necessary for technology development.

global platform: facilitate dialogue for all aspects in the industry



To Establish a Cross-domain Collaboration Platform

GLOBAL DIALOGUE

A platform to facilitate the global dialogue on AI for health.
(with regular meetings, thematic workshops and forums)

MULTI-PARTY

Liaisons with standards bodies, consortia, regulators, core research organizations, engineering teams, health professionals, entrepreneurs and policy makers



CROSS-DOMAIN

A partnership with the World Health Organization

GUIDANCE

Guidance and/or a registry platform for serious/adverse event (S/AE) reporting

To Identify Requirements Pertaining to AI for Health

01

VARIOUS USE CASE

To identify various use case descriptions of AI for health-based methods including the problem description.

02

REQUIRED DATA

To identify structured and normalized medical data required for testing AI algorithms and to collect health data for the identified use cases.

03

POTENTIAL PROBLEMS

To identify potential health problems to which AI-relevant interventions and machine learning can be applied and assessed that are scalable.

04

OPPORTUNITIES

To identify standardization opportunities for a benchmarking framework that will enable broad use of AI for health.



To Promote Standardized Evaluation and Validation



ASSESSMENT FRAMEWORK

An assessment framework for standardized evaluation and validation of AI4H algorithms (with WHO)



REPORTS AND SPECIFICATIONS

Reports and specifications for a transparent documentation



OPEN BENCHMARKS

Open benchmarks, targeted to become international standards for the identified use cases.

FOR EACH DOMAIN

- Identify sourcing of test data
- current gold standard test success rates (e.g. how does a professional score on this test data)
- setting of benchmark rates for AI system (to be acceptable for decision support, to be acceptable for autonomous operation)
- acceptable fail modes (e.g. alert human operator if below a given confidence threshold)

Some Problems in Standardization Construction

CROSS-REGIONAL COLLABORATION IS DIFFICULT

Medical information systems are built independently, resulting in resources waste and difficult collaboration in cross-regional, cross-system services.

1

POOR DATA INTEGRATION

The data exchange standards of information systems vary from place to place, forming multiple “information islands”, and high-quality medical resources cannot be shared and maximized.

2

LACK OF STANDARDS AND SPECIFICATIONS IN SPECIALIST APPLICATIONS

Less combined with clinical specialist applications and the daily work of doctors.

3

UNSATISFIED IMPLEMENTATION OF EXISTING STANDARDS

Lack of enforcement to force relevant units to comply with standards.

4



Strict and Unified Evaluation Principles is Necessary

OPEN AND FAIR

Announce standards, specifications, assessment methods, rating standards, and assessment results to achieve a high degree of transparency.

MULTI-DIMENSION
COMPREHENSIVE
EVALUATION

Test and evaluate the object from diverse content, which may include data standard conformity, shared document specification conformity, technical specification conformity, application effect, to ensure comprehensive, objective and accuracy evaluation results.

QUANTITATIVE
AND QUALITATIVE
COMBINATION

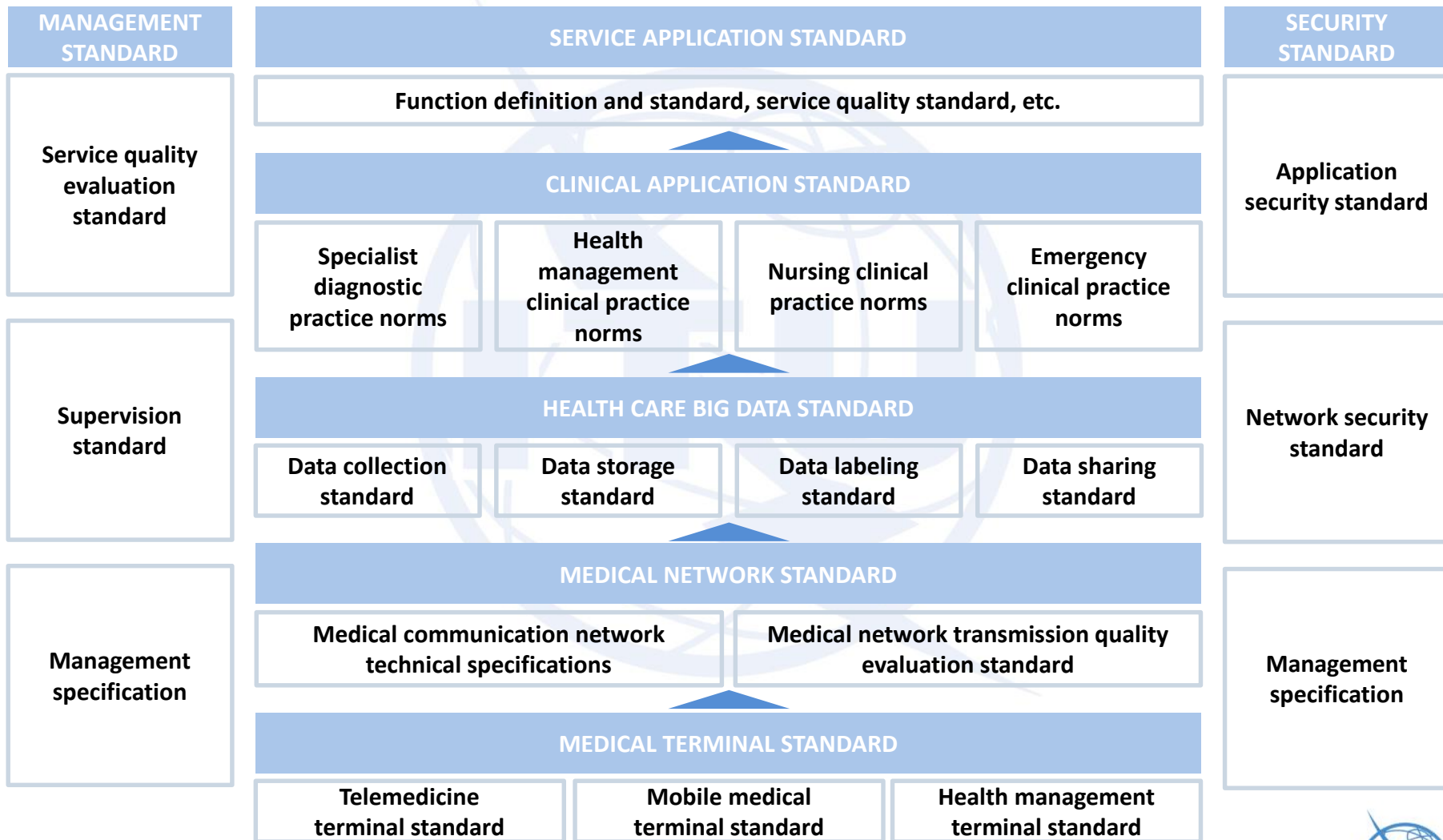
Test and evaluate the object from both the quantitative test and the qualitative evaluation. Use test tools to obtain objective test results by quantitatively analyzing the completion of each indicator, then qualitative analyze the results according to rating method by expert group to determine the corresponding level.

REPEATABILITY
AND
REPRODUCIBILITY

Make sure the evaluation method, test case and test procedure can be repeated for different test institutions and tested institutions. The test results of multiple times, using same content and same way, should be the same to ensure reproducibility.



A Comprehensive Standard System is Important





Thank you !

