KPBM
Korean Society for Patient Blood Management

2025 KPBM
2025 KOREAN SOCIETY FOR PATIENT BLOOD MANAGEMENT ANNUAL SYMPOSIUM

Where PBM Meets Healthcare IT – Today & Tomorrow

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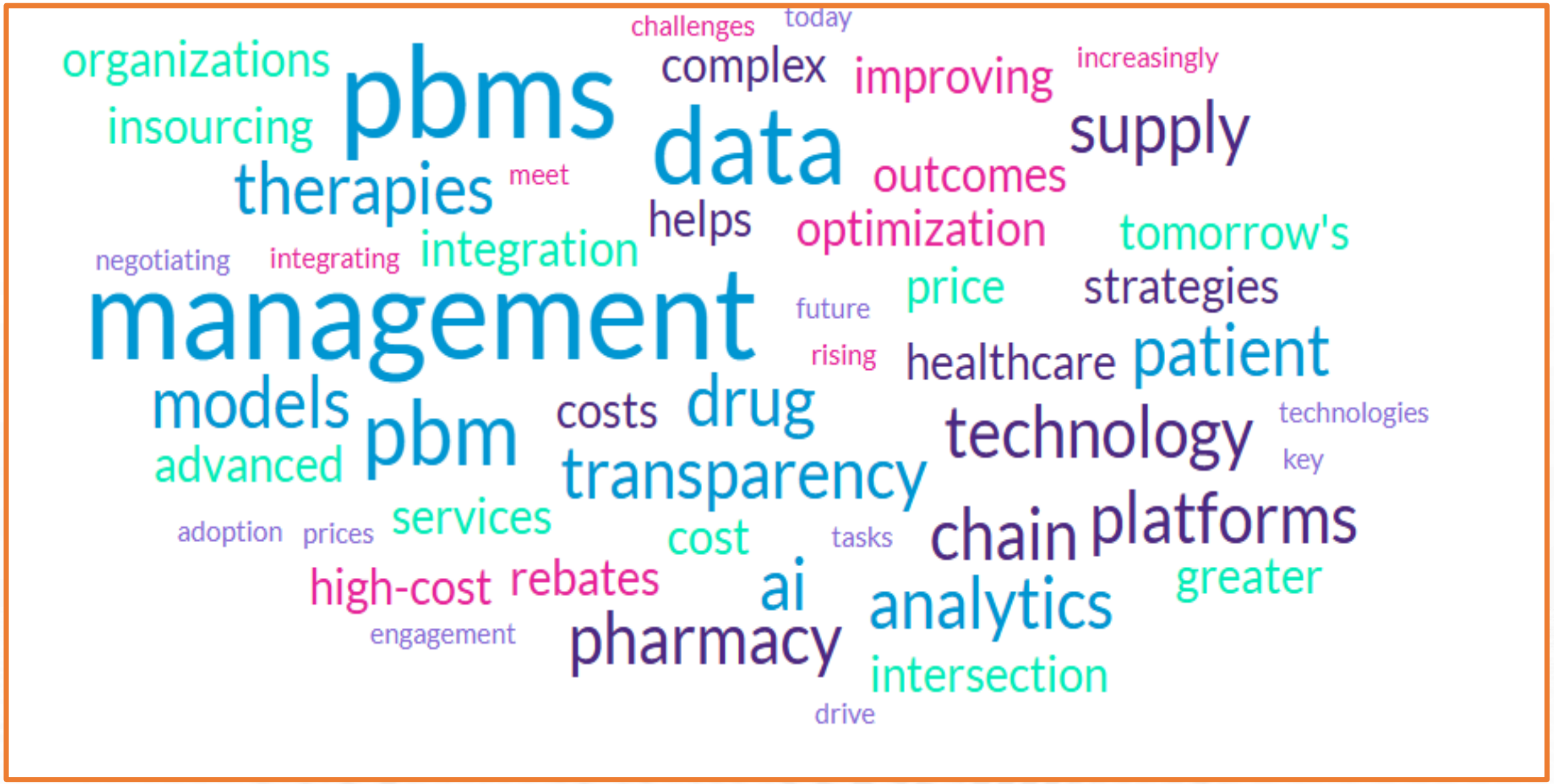
SNUH

- Staff, Professor(1998-), Chair(2020-24), Seoul National University Hospital (SNUH), SNU College of Medicine
- CEO(2022-23), The Korean Society for Thoracic and Cardiovascular Surgery
- President(2024-), The Korean Society for Patient Blood Management(KPBM)
- President(2019-), Heart Valve Disease Forum(1998-), Korea, with STS since 2023
- Official Proctor(2017), Edwards Intuity Elite RD Valve (Innovative heart valve surgery, worldwide largest experience)

- President(2023~25), Institute of Convergence Medicine with Innovative Technology (ICMIT), SNUH
- Chief Information Officer(2017-20), SNUH
- Vice President(2022-23), The Korean Society of Medical Informatics

- Member, The Asian Society for Cardiovascular and Thoracic Surgery (ASCVTS, 2004-)
- Member, The Society of Thoracic Surgeons (STS, 2004-)
- Member, The European Association for Cardiothoracic Surgery (EACTS, 2014-)
- Class of Academy Fellows of IAHSI(The International Academy of Health and Sciences informatics, 2024-)
- Member, The American Association for Thoracic Surgery (AATS, 2025-)

Patient Blood Management,,, AI review via word cloud



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SNUH

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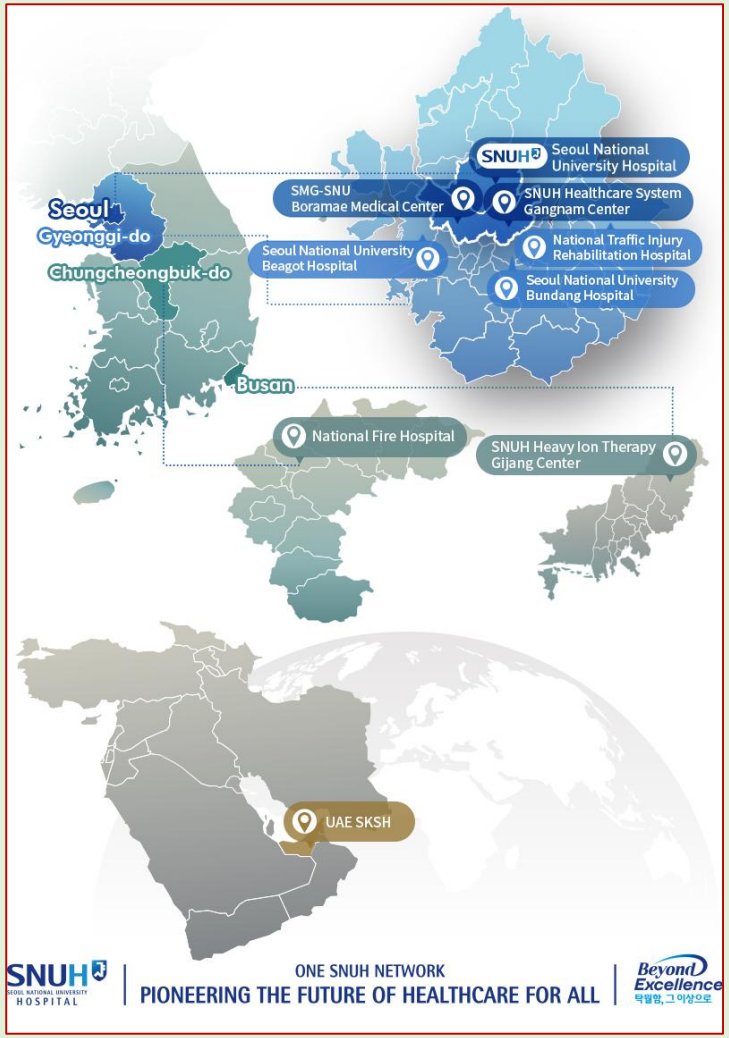
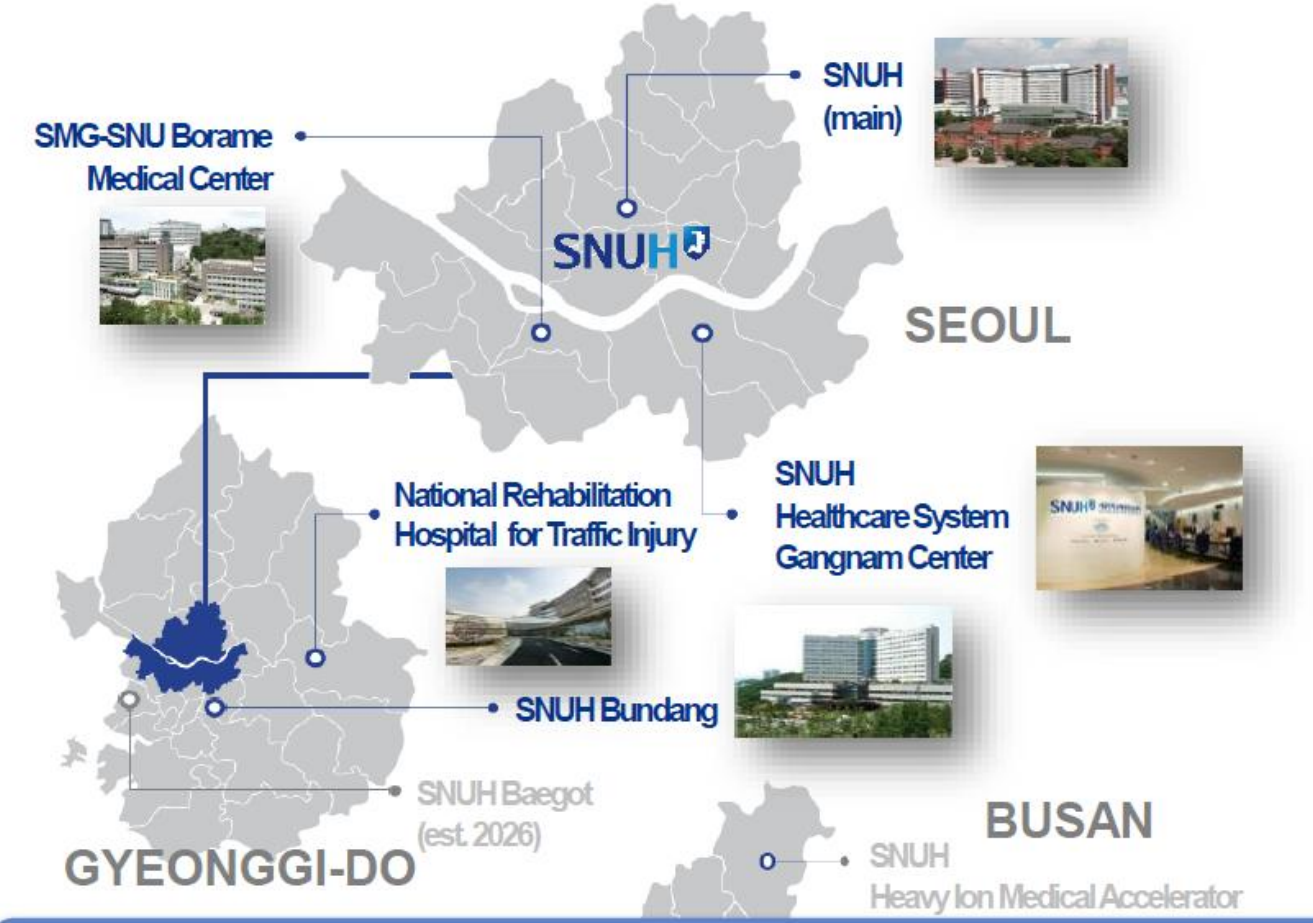
Hospital Information System in Korea

Role of SNUH



SNUH Health System Now

SNUH MEDICAL NETWORK in KOREA



Number of Beds
4,129 Beds

Number of Outpatients / Inpatients
5,083,432 / 1,232,775

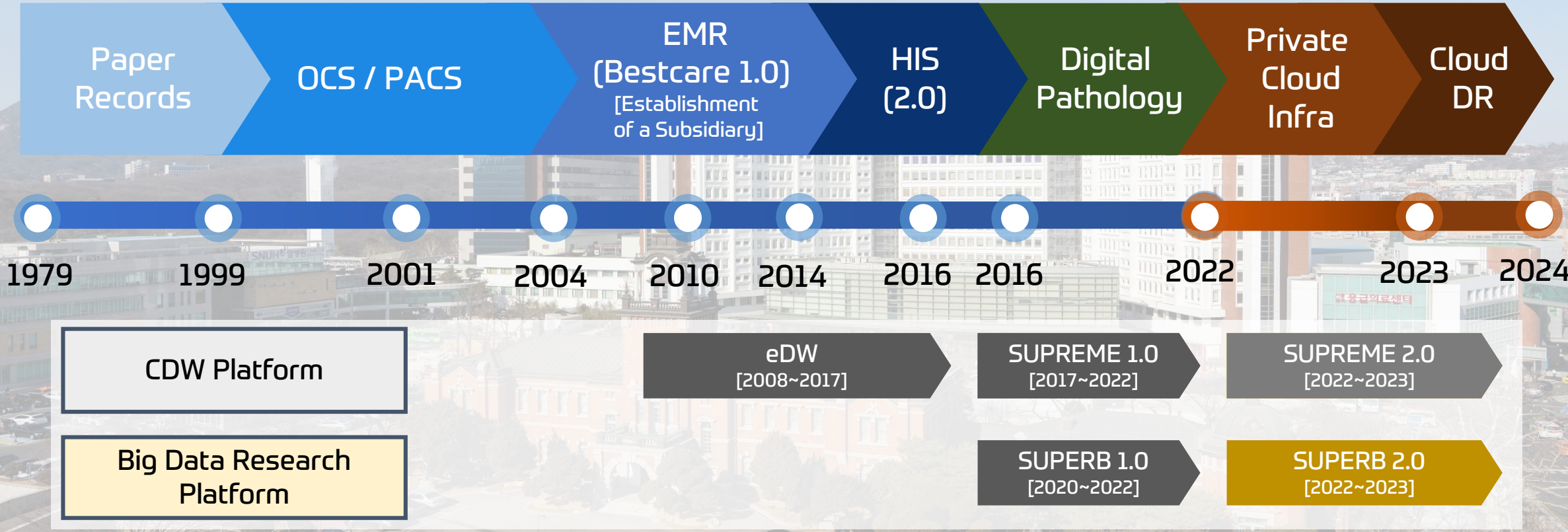
Research Funds
USD 183million
(KRW 242billion)

Number of Employees
16,635

Main hospital + 2 General hospitals, Health screening center,
Specialized rehabilitation hospital, and SKSH at UAE

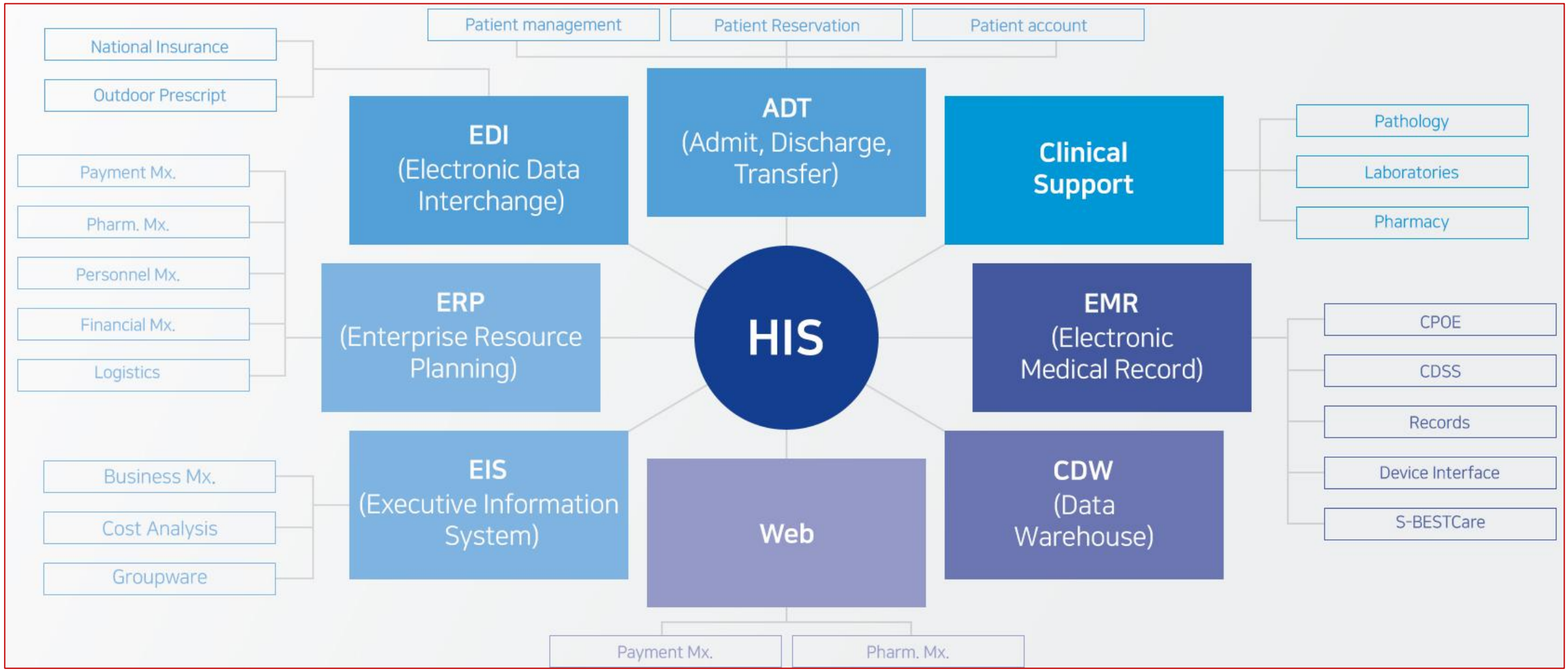
The Advancement of Hospital Information Systems

SNUH is pioneer in the development of hospital information systems in Korea.



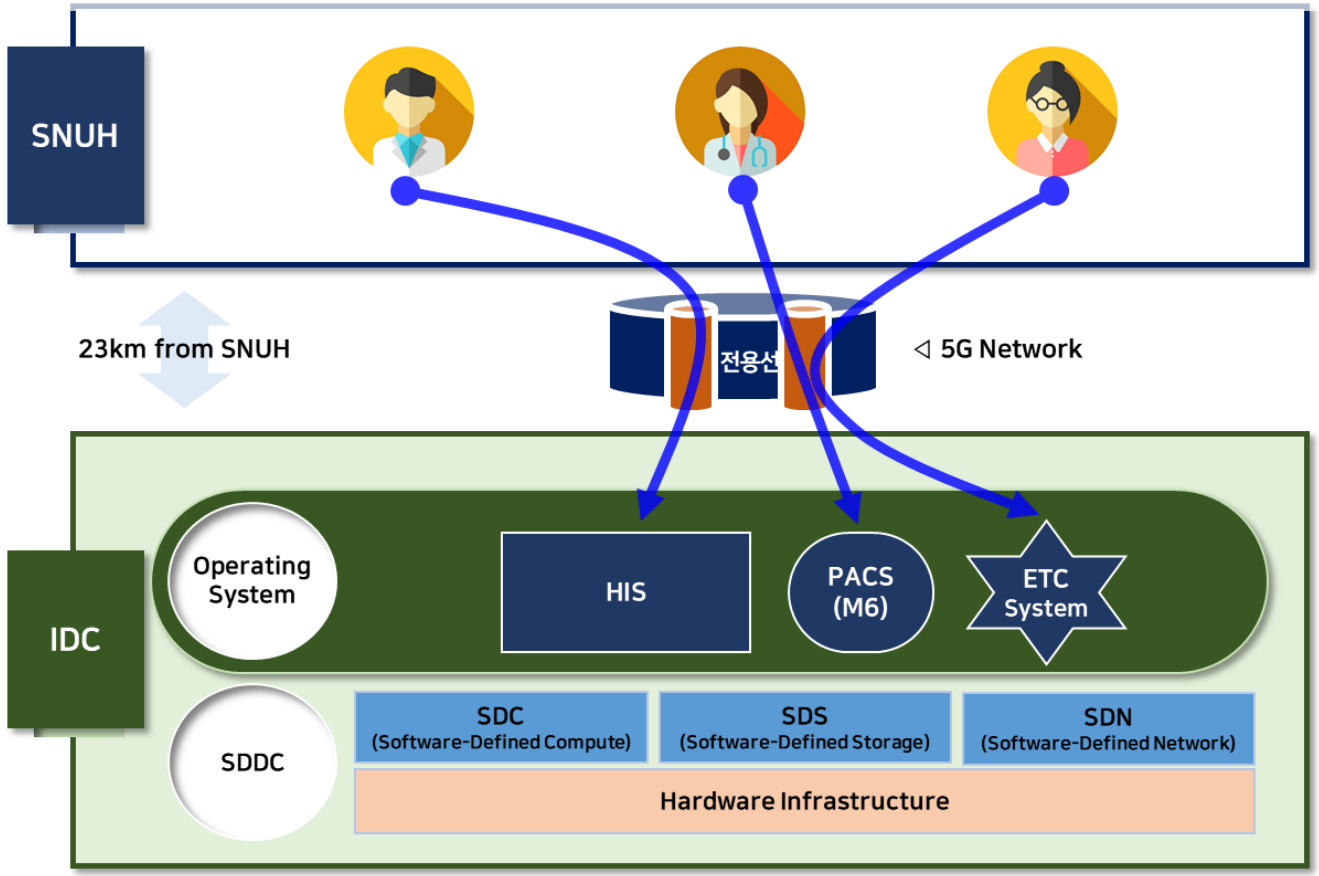
[HIS] Bestcare 2.0

- By ezCaretech (SNUH), Fully integrated system, PACS is the only separated system.



[Infra] SNUH Private Cloud

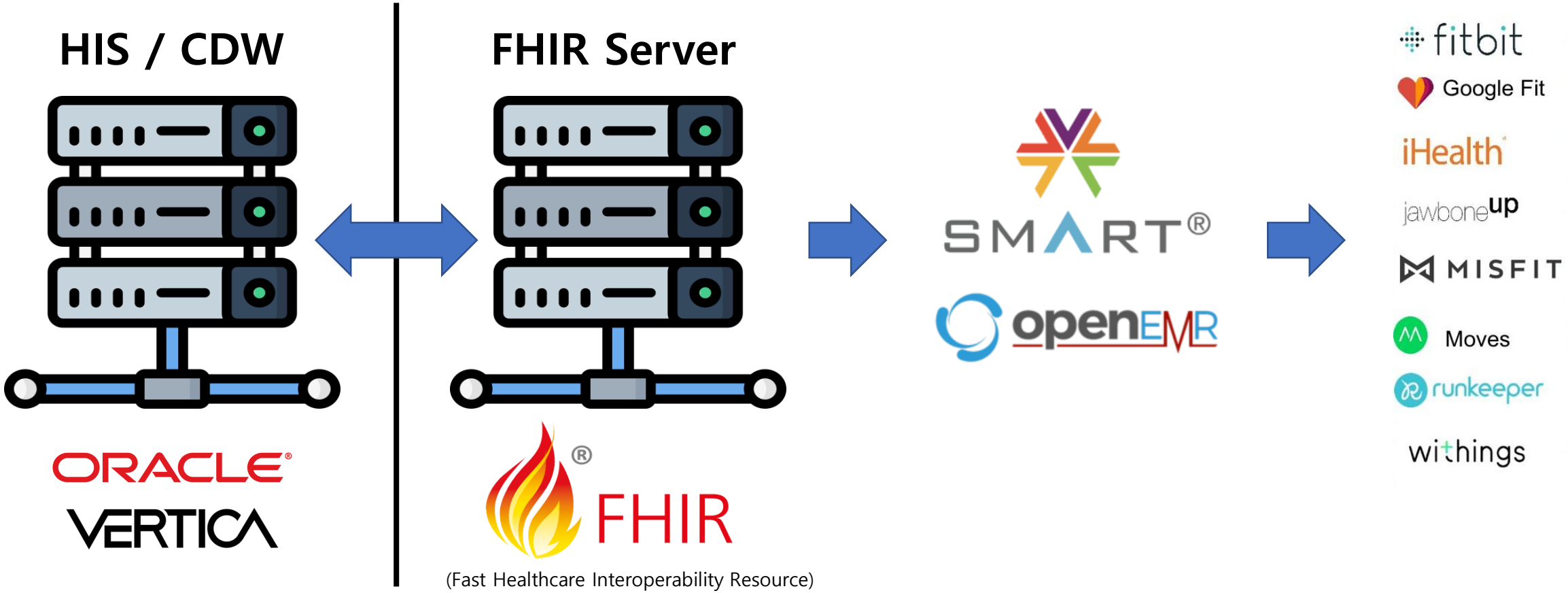
- Established and operated by SNUH with MEGAZONE(Korea's largest cloud service provider)
- There is no main server room in the hospital



- All infrastructure elements (server network, storage, and computing resources) are virtualized and controlled by software.
- Operating systems(HIS, PACS, and so on) are serviced on the virtualized servers.
- Users connect to the operating systems through two dedicated lines(Active-Active)

[Research HIS] HIS-FHIR Architecture

- HL7 Standard FHIR (Fast Healthcare Interoperability Resource) based System
- Provides Digital Healthcare APPs through SMART on FHIR



HL7 FHIR

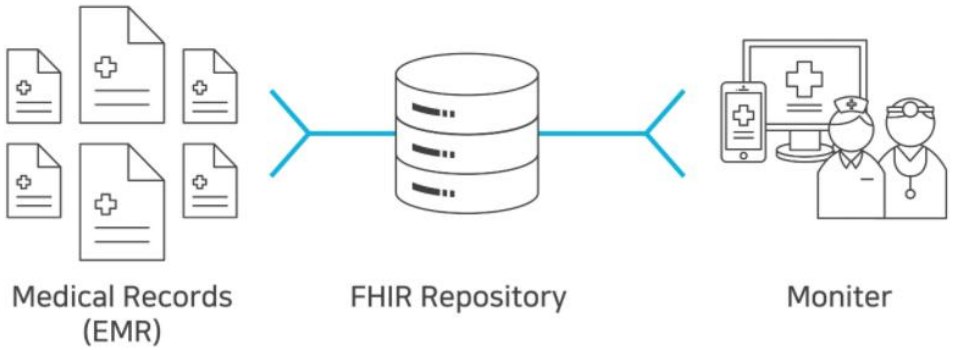
FHIR(Fast Healthcare Interoperability Resources)

- A method of sharing and systematizing independent medical datasets
- Divides medical information into a unit called “resource”, which can also be comprised of multiple resources

  example) 1 patient resource, 2 encounter resources, 2 diagnostic report resources, 1 medication resource
- FHIR is applicable to various scenarios that arise in actual medical practice. It can be used in various situations, including in mobile app, cloud communication and Personal Health Records (PHR)

Benefits of FHIR:

1) Can be easily understood by developers
2) High scalability due to its flexible structure
3) Compatible with huge number of data types
4) Guarantees interoperability with existing EMR systems



Plans for Developing Standardization Module for Integrating Global Standards

Plans to create an universal standardization module based on PBM guidelines

- Develop standardized data model to store different medical institution's PBM related data on the centralized DB
- Medical concept standardization will heavily rely on SNOMED CT*, while data structure will refer to HL7 FHIR*

SNOMED CT
The global language of healthcare

- Global medical concept standard that was adopted in Korea in 2020.
- Pros: Minimizes confusion between doctors. Enables PBM system to be aligned with international standards

- Standardized data model for improving interoperability of medical data.

Highly scalable.

Pros: Can easily adjust PBM data structure
➔ Creates national PBM system that is highly flexible

LOINC

- The universal standard for identifying health measurements, observations, and documents
- From 1994
  - Regenstrief Institute
  - Non-profit research organization in Indianapolis
  - U.S. National Library of Medicine (NLM) accounts for about 2/3 of funding

* SNOMED CT: Systematized Nomenclature of Medicine – Clinical Terms
** HL7 FHIR: Health Level 7 Fast Healthcare Interoperability Resources

Topic 1: Hospital Information System in Korea

Key Message is…

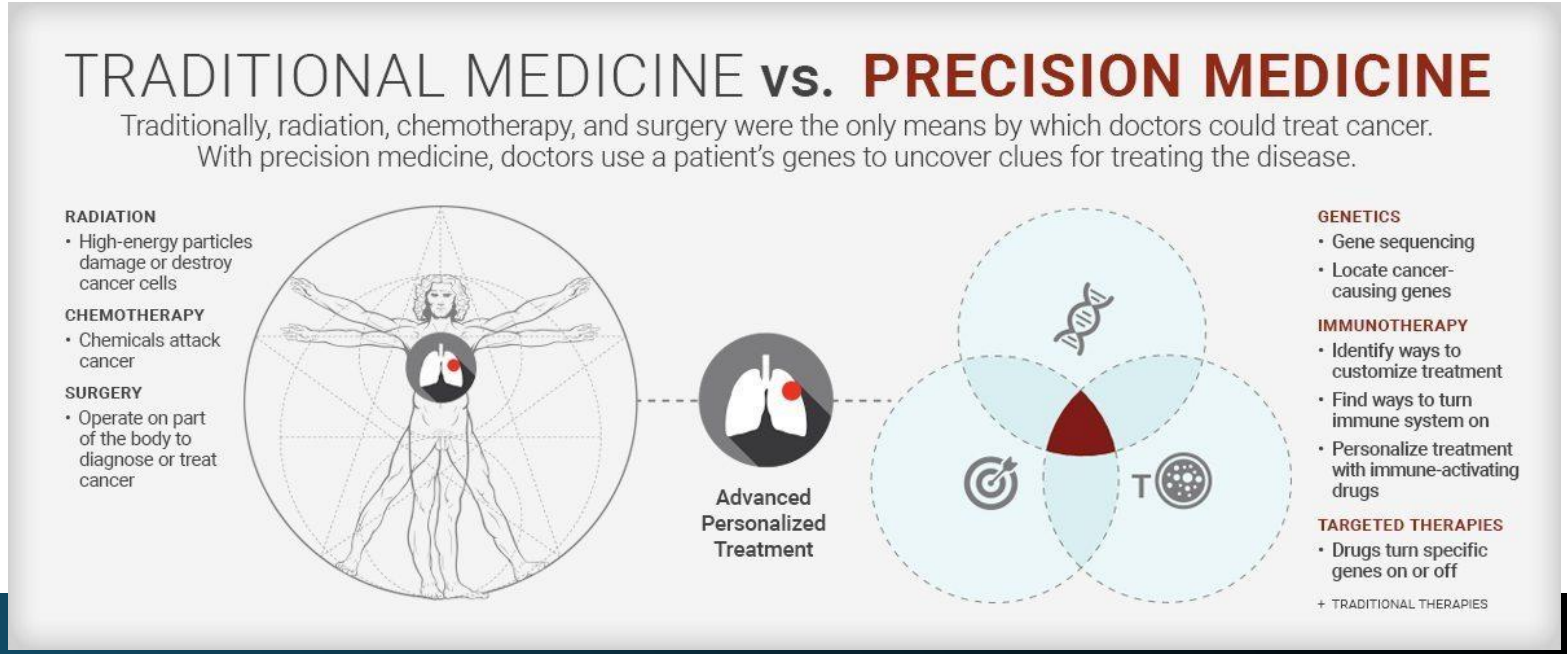
If you want merging HIS data with PBM related data, appropriate HIS and standardization preparation must be preceded. SNOMED CT, HL7 FHIR, LOINC systems are essential.

Topic 2

Experience of Precision Medicine Platform and Application Plan for PBM

Personalized and Precision Medicine

- Advances in genomics and machine learning will facilitate personalized blood management strategies, tailoring interventions to each patient's unique genetic makeup, risk profile, and clinical condition.
- This approach could minimize the need for blood transfusions and optimize the use of alternatives based on individualized patient data.



Syapse

Reach of the Syapse Network

209K+
new cases annually

1,300+
oncologists

440+
hospitals

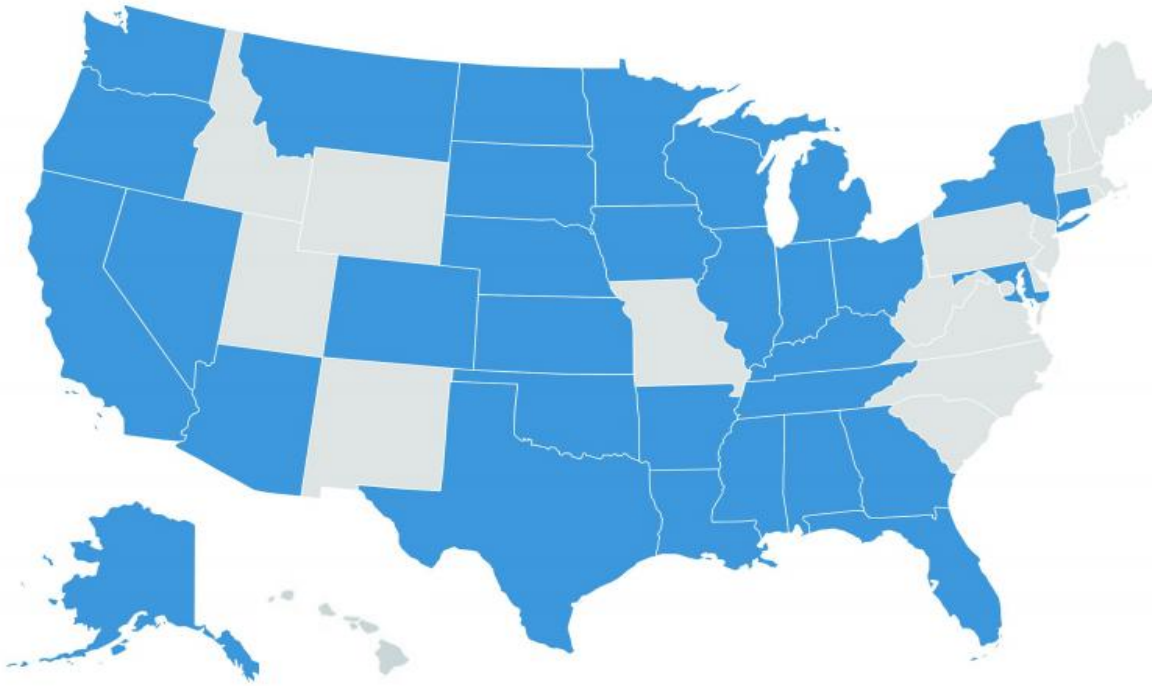
AdvocateAuroraHealth

Ascension

CommonSpirit
CHI + Dignity Health

Henry Ford Health System

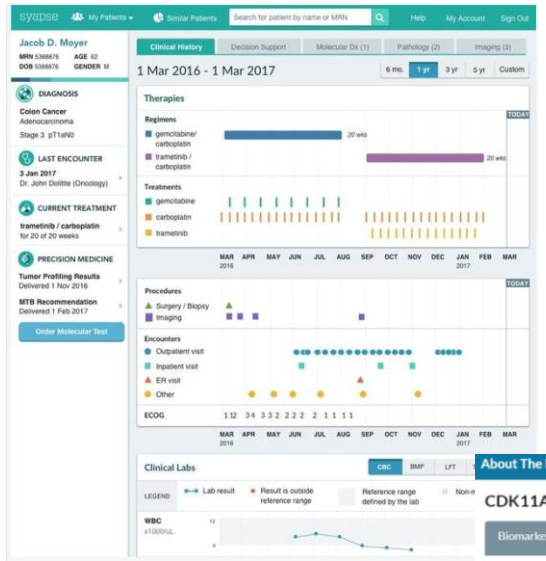
Providence St. Joseph Health
Hoag + Swedish Cancer Institute



SNUH
서울대학교병원

South Korea

Syapse - Data Upload to Amazon Cloud



BEST Care 2.0

Clinical Data
Lab Data

MDx Results
VCF

Molecular Lab

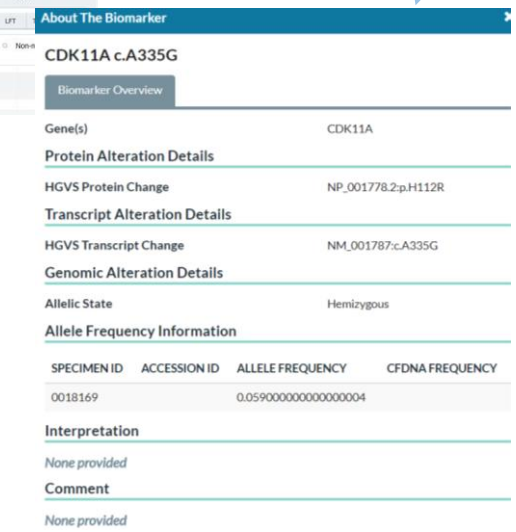
Integrated
Patient view

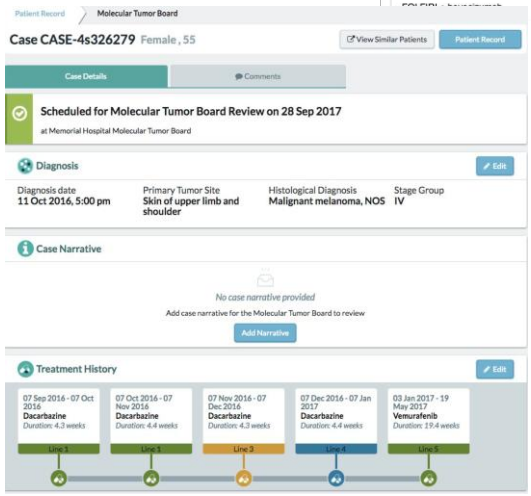
syapse

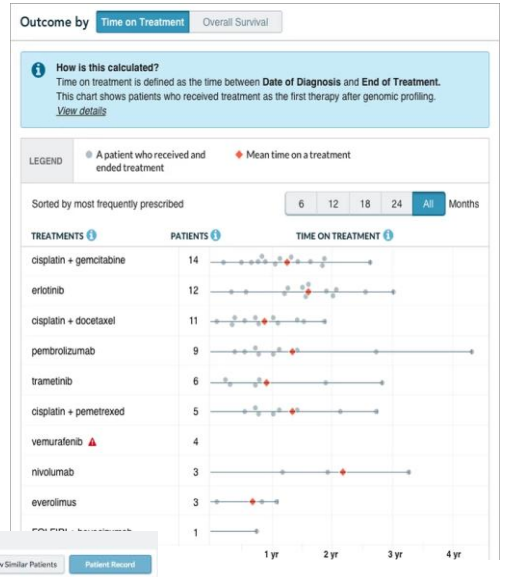
Clinical
Analytics

MDx Report

Molecular
Tumor Board







Need of Precision Medicine in Transfusion Decisions

Limitations of Hemoglobin as a Transfusion Trigger, One-Size-Fits-All Issue

- Genetic and nongenetic factors contribute to the heterogeneity of donated blood products, storage quality, and transfusion efficacy.
  - Clinical factors (e.g., comorbidities, genetics) impact transfusion needs
- Current guidelines may overlook these factors, leading to imprecision medicine
  - Fixed protocols may be suboptimal or hazardous for some patients

✓ Further understanding of genetic factors will improve blood storage practices and transfusion efficacy.

Genetic Factors in Blood Storage

- Omics markers of storage quality and transfusion performances—including hemolysis, post-transfusion recovery, and hemoglobin increments, can be linked to storage quality, including hemolytic propensity. Monitoring of donor “omics” through high-throughput approaches can bring about new personalized transfusion medicine strategies, matching donors, products, and recipients.

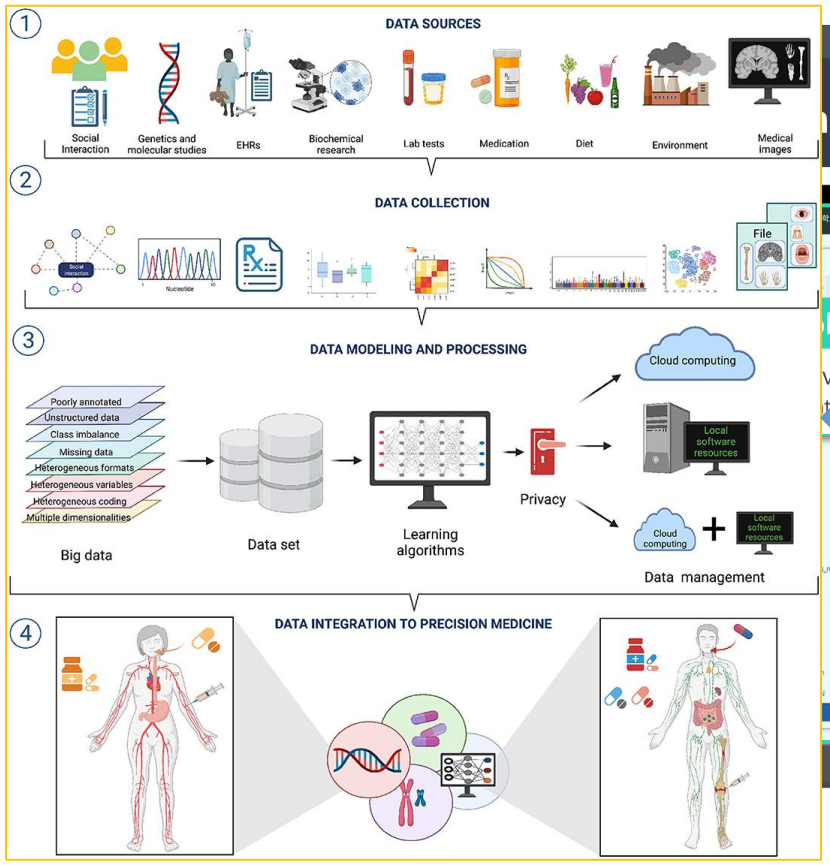
- Emerging Molecular Mechanisms
  - Polymorphisms like G6PD deficiency impact: Redox Newly Identified Mechanisms
  - Polymorphisms in hemoglobin-related genes (e.g., beta-thalassemia minor, sickle cell trait)
  - Potential impacts of blood groups and Rh status on RBC quality under investigation

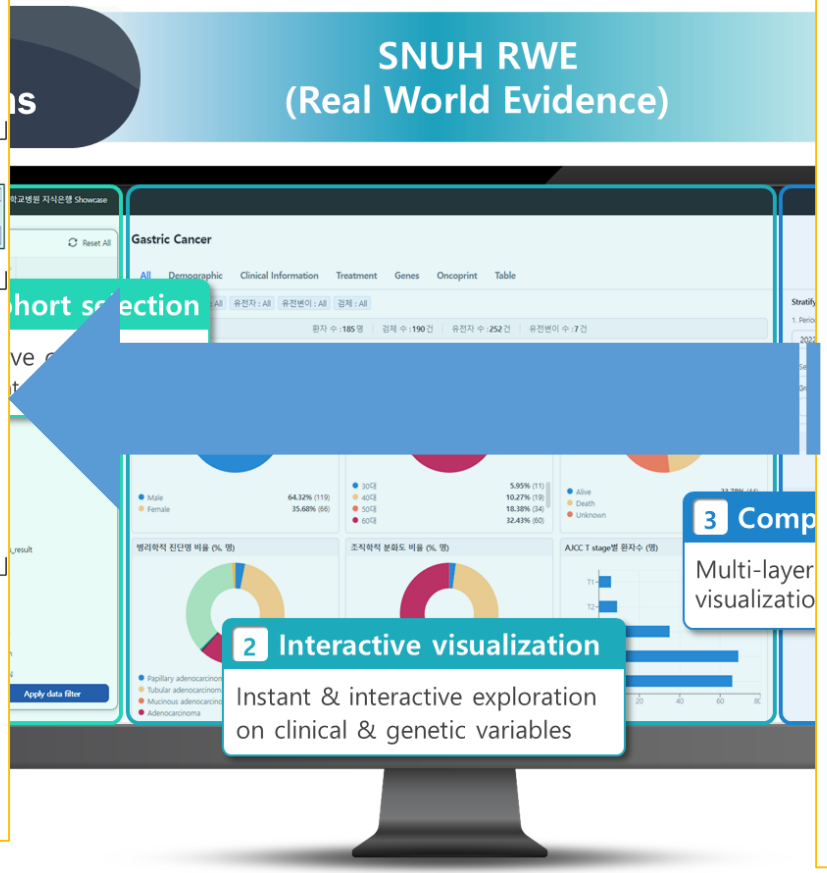
Precision Medicine Knowledge Bank with PBM, Future

· Comprehensive and curated resource that provides data related to precision medicine.

· Aims to facilitate the translation of genomic and molecular data into actionable insights for personalized patient care

➢ Next step is merging PM platform with PBM module.





Topic 2: Experience of Precision Medicine Platform and Application Plan for PBM

Key Message is...

If the genomic precision medicine platform, primarily used for cancer and rare diseases, were to be introduced to PBM, it would be possible to identify various omics changes following the administration of blood and blood-related products.

If these results could be tailored to individual patients through a precision medicine platform, it would be a significant benefit for improvement of PBM.

Topic 3

PBM Implementation in Hospital Information System

Examples of Seoul National University Hospital

Presented as poster in NATA 2025, Munchen

Developing EMR Standardization Module for PBM

To develop a standardization module that sends and receives PBM related information from each institution's hospital information system (HIS) for nationwide PBM

Standardization module development

- Create data models aligned with EMR standards
- Align with international standards such as SNOMED CT.
  Design in accordance with HL7 FHIR standard

KPIs/statistic monitoring system development

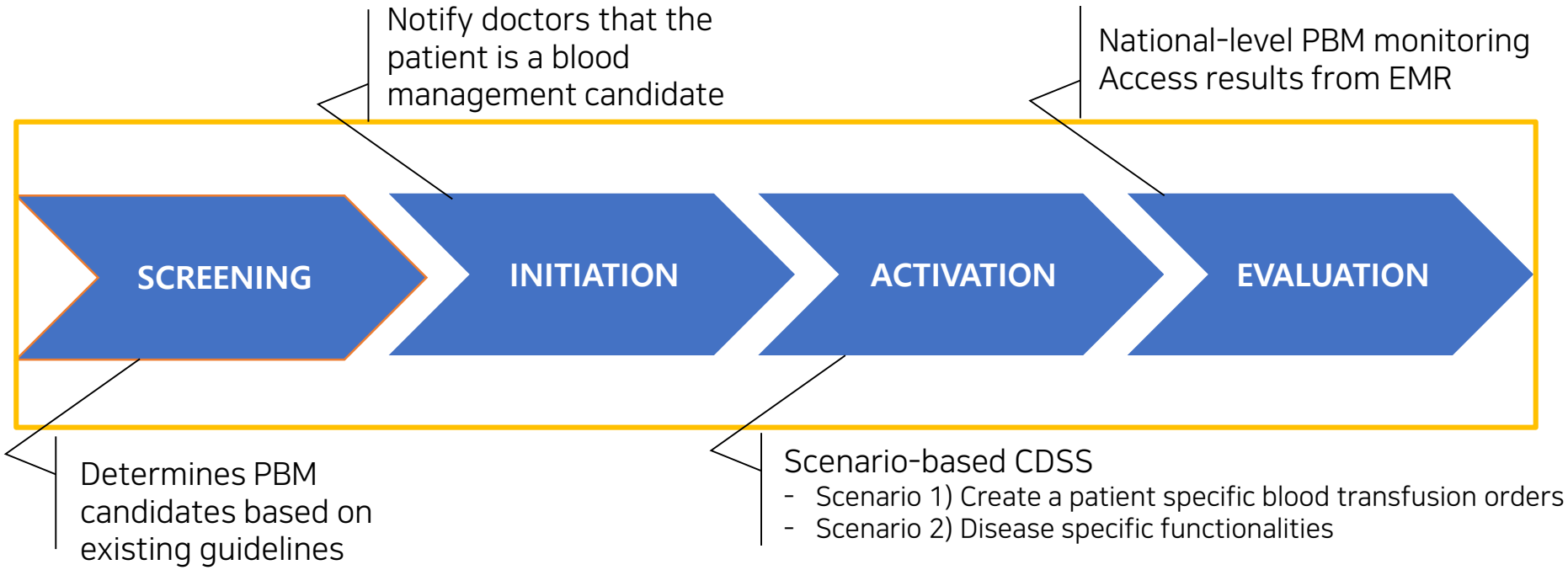
- Develop KPI and statistic monitoring system for tracking national PBM status

Integration with HIS and pilot testing

- Integrate the standardization module with existing HIS for pilot testing

Implementing Clinical Decision Support System(CDSS)

- Deployed CDSS on BestCare 2.0 (HIS of SNUH) as a pilot test
- Comprised of 4 stages



Implementing Clinical Decision Support System(CDSS)

SCREENING
(Targeting patients visiting the department of Surgery, Obstetrics & Gynecology or Orthopedic Surgery)

- Hb < 13 (Male) 12 (Female) or
- platelet <100,000 or
- PT or aPTT prolongation

INITIATION

(1) Required collection time
- Initial days of admission (including outpatient care) based on the patient's delivery date and during discharge
- Initial days of admission (including outpatient care) based on the patient's surgery date and during discharge

(2) Collect Initiation Key Dataset
- Baseline demographics
- Clinical lab: Hb, ferritin, iron/TIBC, platelet, PT, aPTT, PT INR, reticulocyte count
- Diagnosis Code

Completed collecting Initiation key dataset with CDSS at required collection time

ACTIVATION

(1) Scenario-based CDSS activation and Key Dataset collection
- Acute bleeding and acute anemia (Surgery, GI bleeding, Trauma, Pulmonary, Urinary, Etc.)
- Chronic Bleeding and/or chronic anemia (GI, GU, Pulmonary)
- Thrombocytopenia
- Coagulation disorder

(2) PBM reactivation CDSS
- RBC Transfusion 1 pint
- CBC abnormality(Hemoglobin, Platelet)
- Abnormal coagulation profile

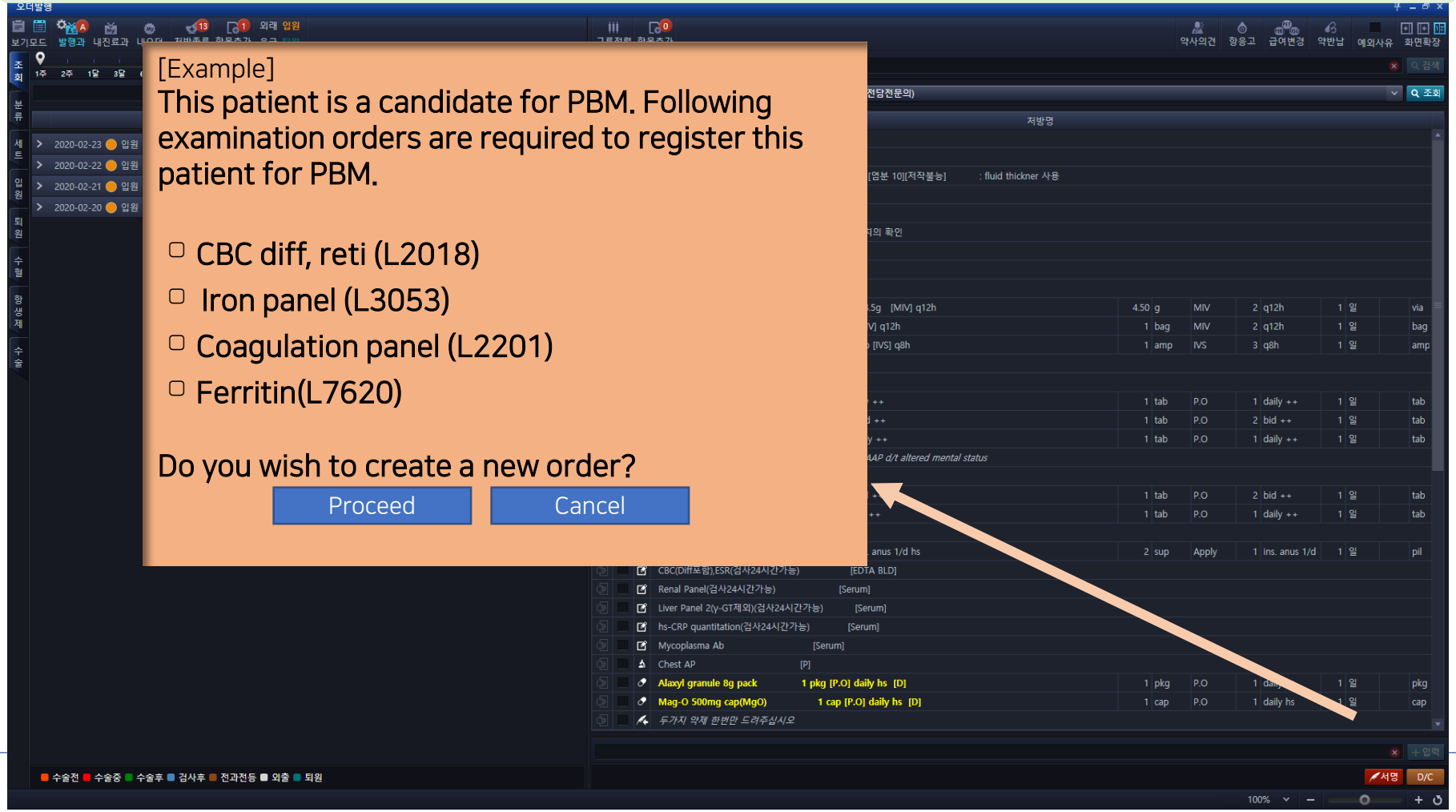
(3) Data collection time
- Upon completing medical examination (for both outpatient care and admission)

EVALUATION

Implementing Clinical Decision Support System(CDSS)

SCREENING | INITIATION | ACTIVATION | EVALUATION

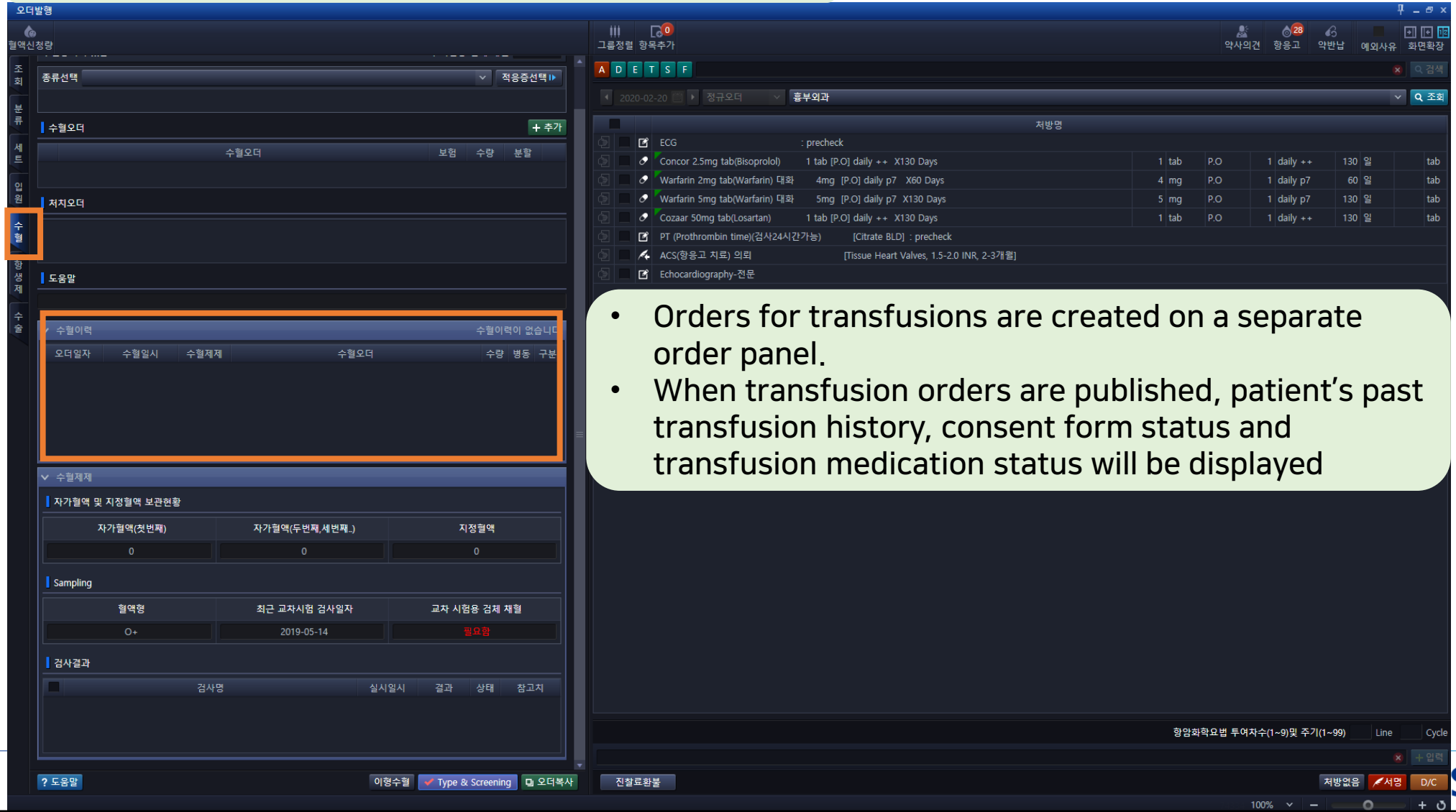
When screening criteria are satisfied, a doctor creating an order will be notified that the patient is a candidate for PBM.
Pop-up screen is generated to encourage the doctor to include examinations for collecting key dataset



Implementing Clinical Decision Support System(CDSS)

SCREENING | INITIATION | ACTIVATION | EVALUATION

I. Displaying the patient's transfusion history



- Orders for transfusions are created on a separate order panel.
- When transfusion orders are published, patient's past transfusion history, consent form status and transfusion medication status will be displayed

Reference: Patient's Transfusion History Panel from HIS

수혈이력상세조회

환자별 / 현위치별 / 원무위치별 / 발행처별 / 수혈장소별 [redacted] 79 B+ 불출기간 2014-10-02 ~ 2014-11-02

출고처 전체 혈액최종상태 전체 혈액제제 전체 전혈 및 적혈구 제제 조회 수술장수혈 및 혈액은행자체반납 제외

오더일자	오더명	불출일자	혈액번호	혈액제	혈액용	혈액	방사	백혈	혈액수령일시	혈액도착일시	수혈전활력징	SBP	DBP	HR	RR	BT	수혈시작일시	15분활력징	SBP	DBP	HR	RR	BT	수혈종료일시	부작	보낸일시	보낸장소	출고	오더	수혈	최종상태	폐기반납사유	심폐기
2014-10-04	Plateletpheresis (적...	2014-10-04	0314202464	APH22	250cc	B+	N	Y	10-04 18:54	10-04 19:00	10-04 19:00	133	69	86	16	35.6	10-04 19:00	10-04 19:05	166	74	84	15	35.6	10-04 20:00	N			병동	RICU	RICU	출고		
2014-10-04	Plateletpheresis (적...	2014-10-04	0314166417	APH22	250cc	B+	N	Y	10-04 13:30	10-04 13:35	10-04 13:35	160	68	94	16	36.3	10-04 13:35	10-04 13:40	158	68	94	18	36.3	10-04 14:30	N			병동	RICU	RICU	출고		
2014-09-30	Red blood cell (400...	2014-10-02	0314169568	RBC	320cc	B+	N	N																				수술실	074		은행 자체	99 : 수술대비용	
2014-09-30	Red blood cell (400...	2014-10-02	0314171597	RBC	320cc	B+	N	N																				수술실	074		은행 자체	99 : 수술대비용	

수혈이력상세조회

환자별 / 현위치별 / 원무위치별 / 발행처별 / 수혈장소별 [redacted] 81 B+ 불출기간 2019-06-28 ~ 2019-07-29

출고처 전체 혈액최종상태 전체 혈액제제 전체 전혈 및 적혈구 제제 조회 수술장수혈 및 혈액은행자체반납 제외

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2019-06-27	Red blood cell (400...	2019-06-29	0319112207	PSLDR	400cc	B+	N	Y																				수술실	071		반납	99 : 수술대비용	
2019-06-27	Red blood cell (400...	2019-06-29	1219086049	PSLDR	400cc	B+	N	Y																				수술실	071		반납	99 : 수술대비용	
2019-06-28	Red blood cell (320...	2019-06-29	0319113113	RBC	320cc	B+	N	N																				병동	RICU		반납	9 : 환자상태호	
2019-06-28	LD Plateletpheresis(L...	2019-06-28	0319116683	APH22	250cc	B+	Y	Y	06-28 18:58	06-28 19:00	06-28 19:00	127	77	90	36	36.8	06-28 19:00	06-28 19:05	114	68	94	47	37.3	06-28 19:30	N			병동	RICU	RICU	출고		
2019-06-27	Red blood cell (400...	2019-06-28	0319089462	FFP	400cc	B+	N	N	06-28 12:03	06-28 12:06							06-28 12:07											수술실	071	OPT	출고		
2019-06-27	Red blood cell (400...	2019-06-28	0319092597	FFP	400cc	B+	N	N	06-28 12:03	06-28 12:07							06-28 12:07											수술실	071	OPT	출고		
2019-06-27	Red blood cell (400...	2019-06-28	0319099869	FFP	400cc	B+	N	N	06-28 12:02	06-28 12:07							06-28 12:07											수술실	071	OPT	출고		
2019-06-27	Red blood cell (400...	2019-06-28	0319117104	APH22	250cc	B+	N	Y	06-28 11:45	06-28 11:46							06-28 11:48											수술실	071	OPT	출고		
2019-06-27	Red blood cell (400...	2019-06-28	1219075094	PSLDR	400cc	B+	N	Y	06-28 23:43	06-28 23:45	06-28 23:45	92	60	108	12	37.8	06-28 23:45	06-28 23:50	88	56	98	12	37.8	06-29 01:20	N			수술실	071	RICU	출고		
2019-06-27	Red blood cell (400...	2019-06-28	0319106916	PSLDR	400cc	B+	N	Y	06-28 12:40	06-28 12:41	06-28 12:41	151	70	65	14	35.1	06-28 12:41	06-28 12:50	148	82	64	14	35.1	06-28 14:30	N			수술실	071	RICU	출고		
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2019-06-27	Red blood cell (400...	2019-06-28	1219087121	PSLDR	400cc	B+	N	Y	06-28 09:14	06-28 09:16																		수술실	071		출고		심폐기
2019-06-27	Red blood cell (400...	2019-06-28	1219086052	PSLDR	400cc	B+	N	Y	06-28 09:14	06-28 09:16																		수술실	071		출고		심폐기

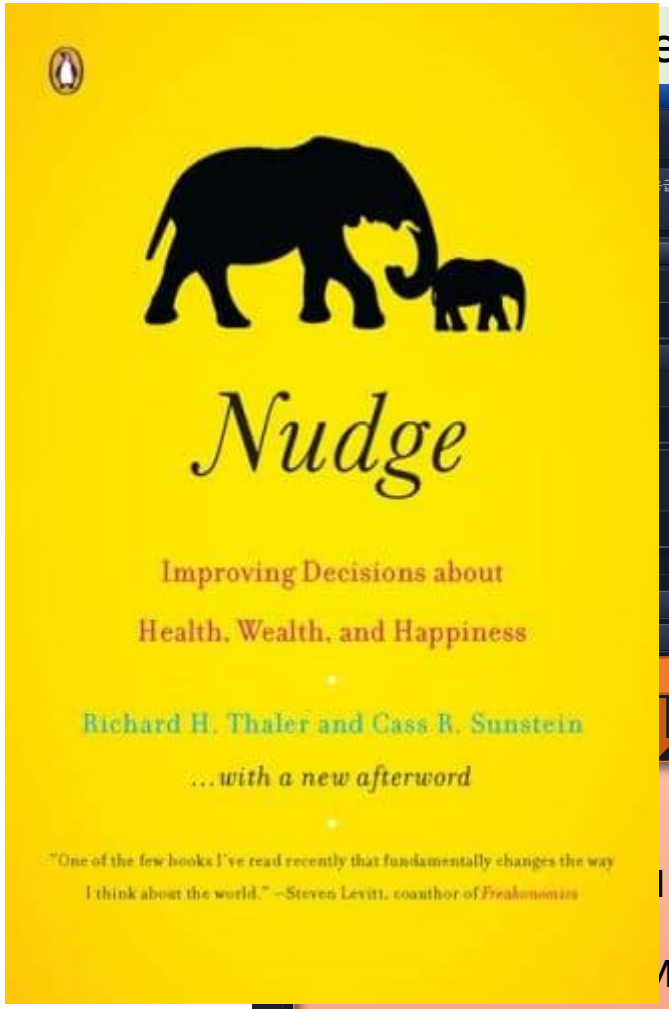
As a reference, this is an actual screenshot from our HIS that allows us to view the patient's transfusion history in detail. From this screen, we are able to identify the patient's transfusion order date, order ID, blood id, time of transfusion, time of blood arrival, location of transfusion, and the patient's vital before and after the transfusion.

SNUH

Implementing Clinical Decision Support System(CDSS)

SCREENING | INITIATION | ACTIVATION | EVALUATION

example



related

CDSS compliance

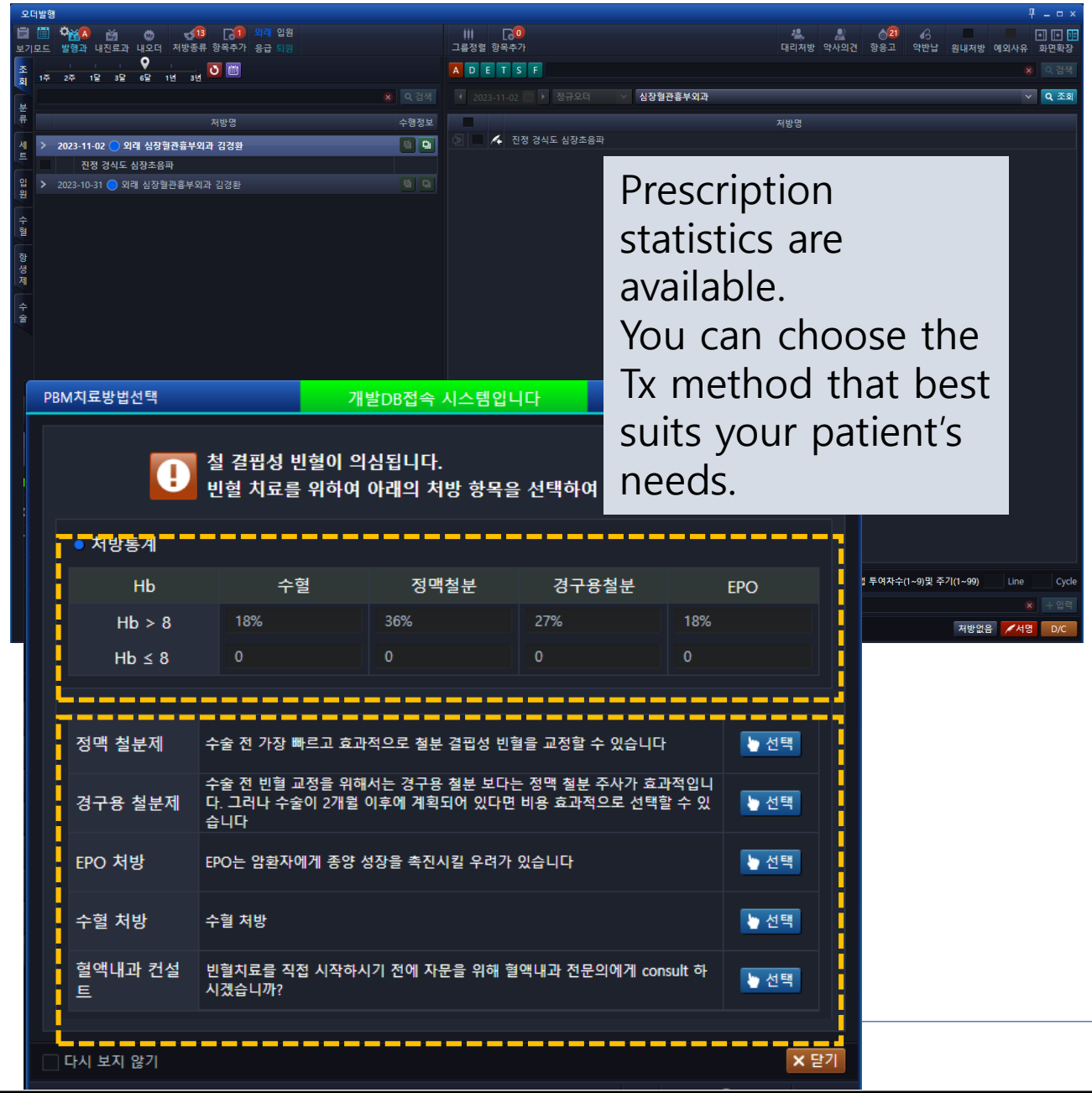
★ Nudge!

When transfusion orders are published, weekly or monthly PBM KPIs and compliance related data are presented, encouraging doctors to adhere to PBM guidelines.

29

SNUH

Implementation of a Clinical Decision-Making System in Practice



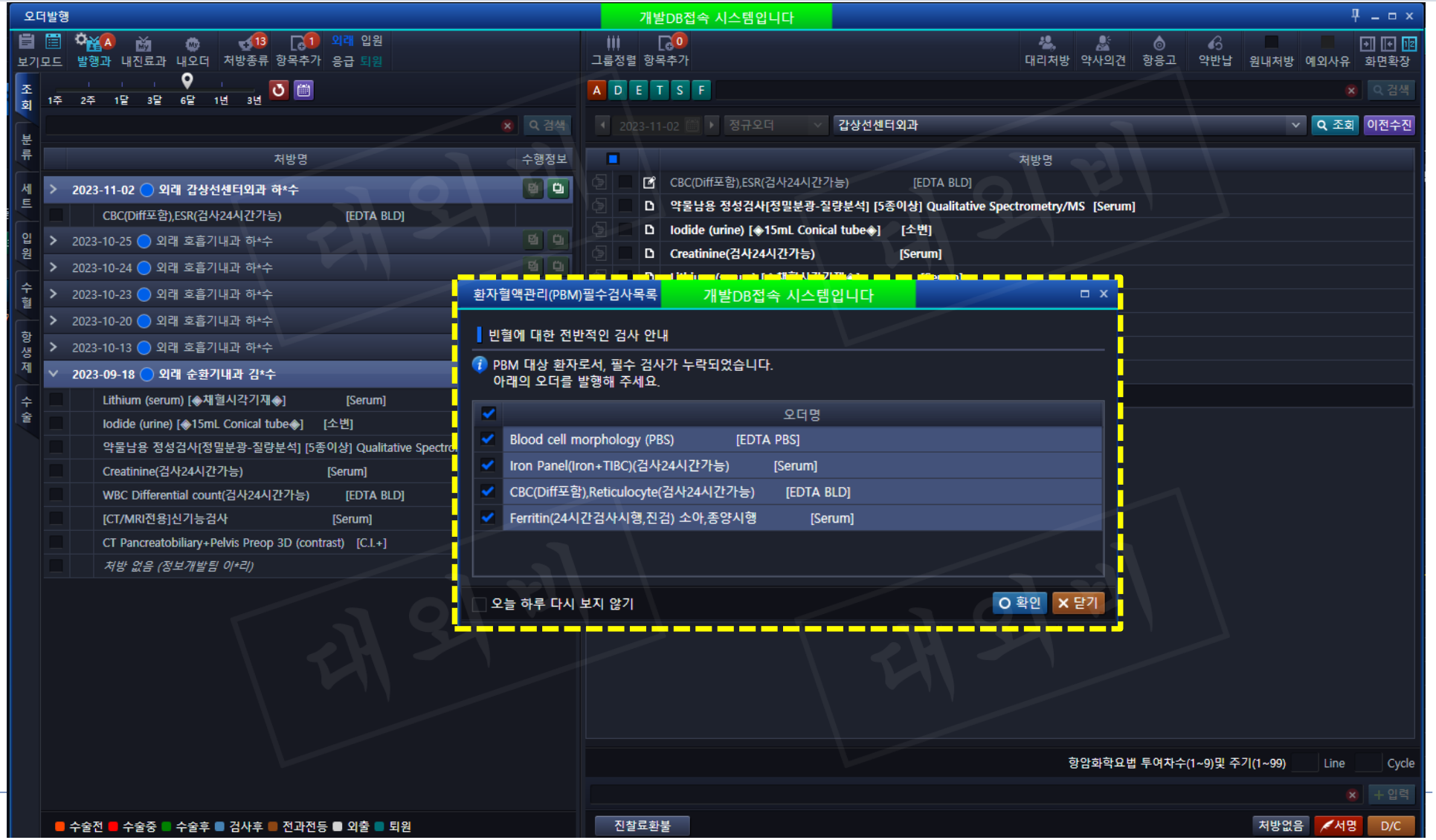
Prescription statistics are available.
You can choose the Tx method that best suits your patient's needs.

Guidelines are presented based on the items selected on the previous screen.

SNUH

Implementation of a clinical decision-making system in practice

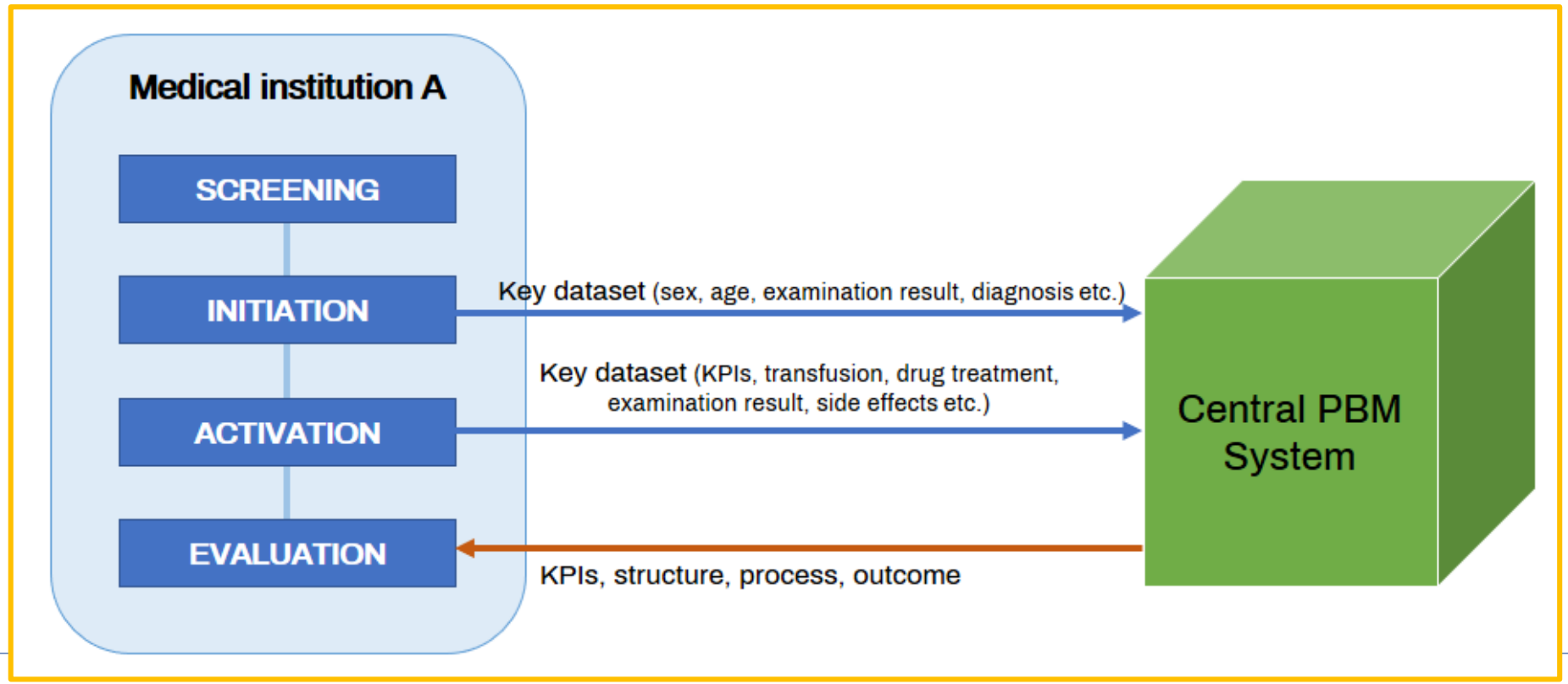
If the screening criteria are met, the following pop-up will be presented when the physician issues an order, notifying the patient of PBM eligibility and encouraging testing to secure a key dataset.



Implementing Clinical Decision Support System(CDSS)

SCREENING → INITIATION → ACTIVATION → EVALUATION

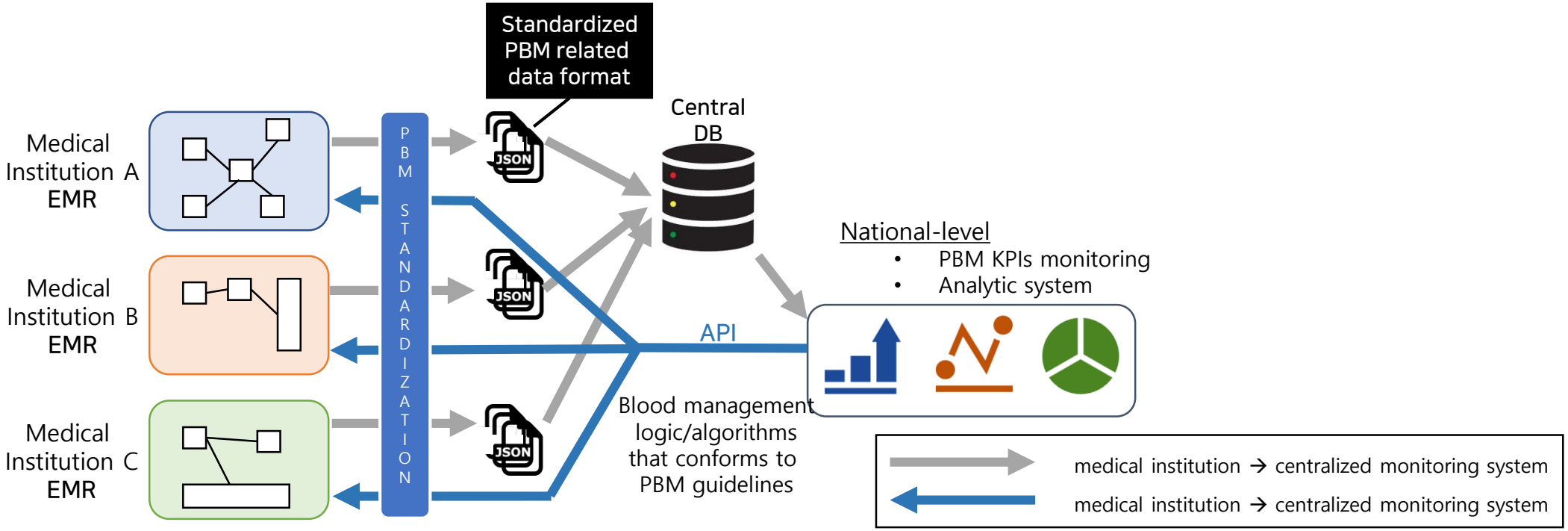
- Provides PBM data to central PBM system
- Creates KPI based on the collected data from medical institutions and Big Data provided by National Health Insurance Service(NHIS)
- Provides feedbacks to each medical institution



SNUH

Future Plans for Developing Standardization Module for Integrating Global Standards

- Plans to develop a standard integration module that will receive PBM related information from each medical institution's HIS, enabling nationwide PBM
- Plans to create a universal standardization module based on 6 types of PBM guidelines that will be developed
- Currently, plans to integrate global standards such as SNOMED CT* (concept standardization), FHIR** (data structure standardization)



* SNOMED CT: Systematized Nomenclature of Medicine – Clinical Terms
** FHIR: Fast Healthcare Interoperability Resources

Patient Blood Management

Prospective Cohort Comparative Study

Courtesy from Prof Young Woo Kim
Special Thanks!

Patient blood management pilot project

Pilot Project Joint Research System

PBM Intervention Group

Seoul National University Hospital

National Cancer Center

Reference Group

Inje University Ilsan Paik Hospital

Gachon University Hospital

Courtesy from Prof YW Kim
Special Thanks!

Patient Registration by Institution

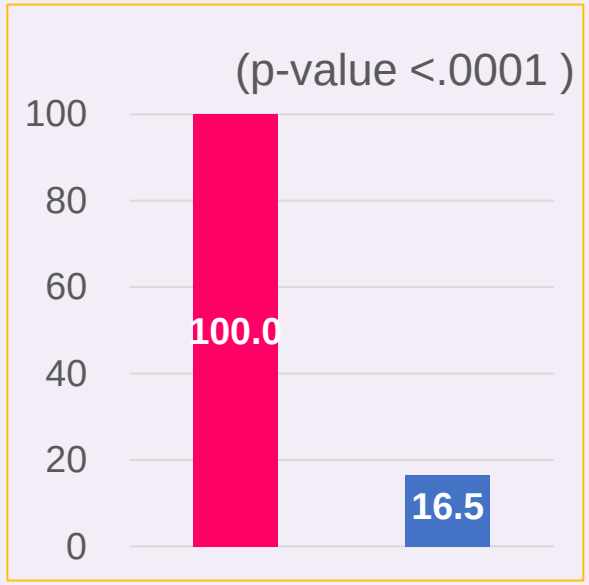
Courtesy from Prof YW Kim
Special Thanks!

Name of Institution	No. Registered Persons	Department	Total by Department
National Cancer Center	104	Stomach Cancer Center	34
		Hepatobiliary and Pancreatic Cancer Center	
		Colorectal Cancer Center	
		Orthopedics	28
		Gynecological cancer	42
Seoul National University Hospital	96	Cardiothoracic Surgery	25
		Colorectal Surgery	21
		Gastrointestinal Surgery	
		Orthopedics	14
		Gynecology	36
Gachon University Gil Hospital	105	Colorectal Surgery	45
		Gastrointestinal Surgery	
		Hepatobiliary and Pancreatic Surgery	
		Orthopedics	32
		Obstetrics and gynecology (gynecological tumors)	28
Ilsan Paik Hospital	101	Gynecology	36
		Orthopedics	39
		Gastric Cancer Surgery	26
		Hepatobiliary and Pancreatic Surgery	
		Colorectal Surgery	

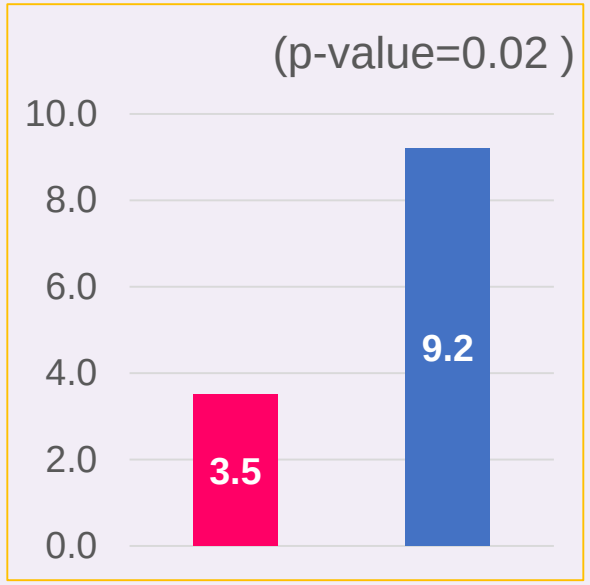
Courtesy from Prof YW Kim
Special Thanks!

Preoperative Anemia Assessment Rate & Preoperative Blood Transfusion Rate

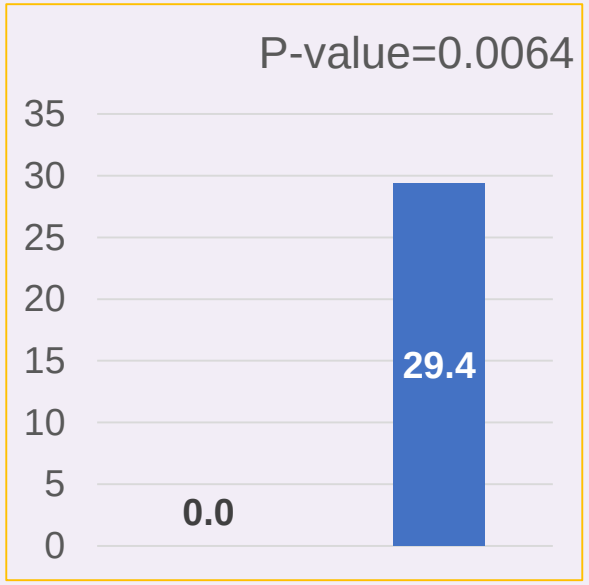
*Serum ferritin, defined as completion of anemia assessment upon completion of transferrin saturation test



The completion rate of preoperative anemia assessment at the pilot project institution was high at 100%.
(p-value < 0.0001)



The preoperative blood transfusion rate at the pilot institution was significantly lower at 3.5% (p-value = 0.02)

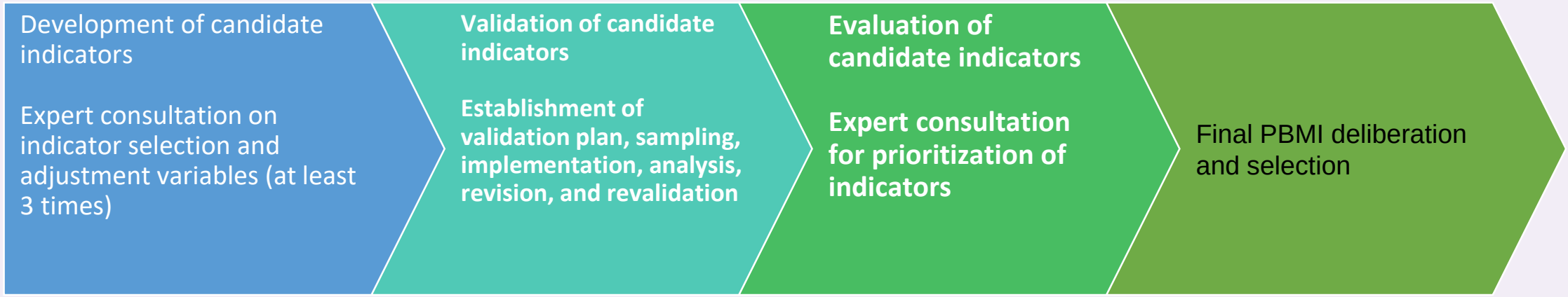


The transfusion rate of the pilot project institution was significantly lower
Pilot institution-> Blood transfusion treatment0 (0%)
5 patients treated with blood transfusion at the control institution-> (29.4%)

Courtesy from Prof YW Kim
Special Thanks!

Need for Second-Stage Expanded Pilot Project

- Cluster Randomized Trial needed: Random assignment at the group or healthcare system level
- Can evaluate the effect of PBM introduction in real clinical environments
- Validation study of PBM indicators (PBMI, Patient Blood Management Index)



PBM-Metrics from …

Benchmarking daily stock market data…

Dynamic Visualization Tools

TIBCO Spotfire®

QlikView

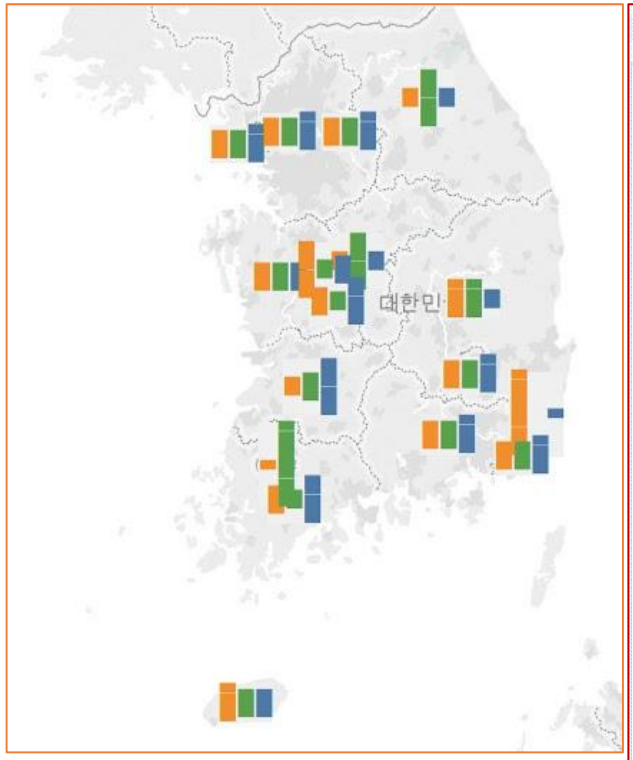
Microsoft | Power BI

Efficient processing of large volumes of data

Data analysis capabilities

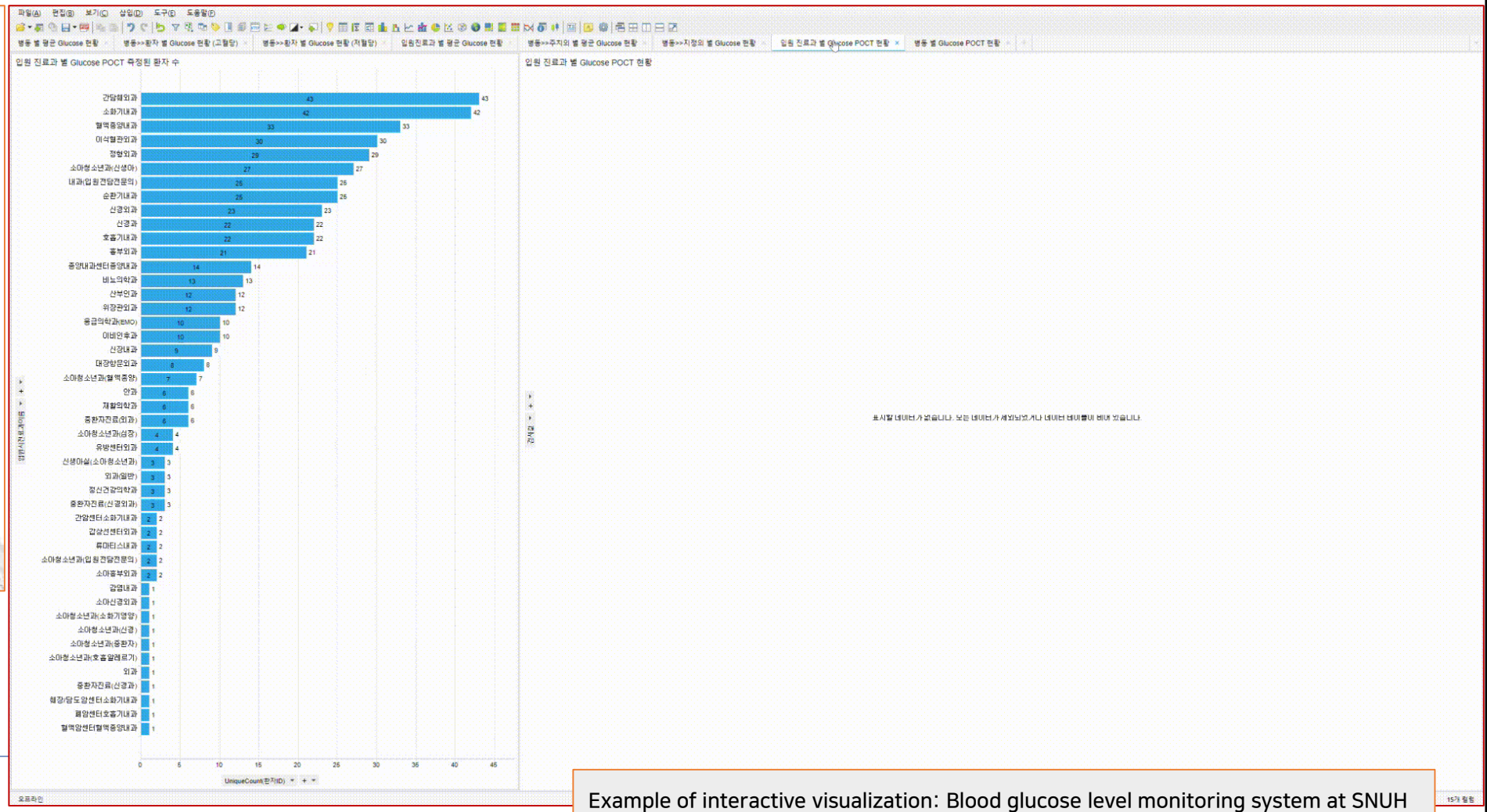
Developing a Nationwide Monitoring System using Dynamic Visualization Tools

To generate nationwide PBM statistics, you need to develop an IT system that operates a database server and provides real-time updates on PBM status. Interactive visualizations can be used to allow users to freely monitor various PBM-related KPIs. Ultimately, you can monitor PBM KPIs at the patient, department, institution, or any other data level with Implementation of a feedback loop that provides alerts when abnormal patterns are detected.



Map chart based on interactive visualization

Can monitor PBM KPIs at a regional level

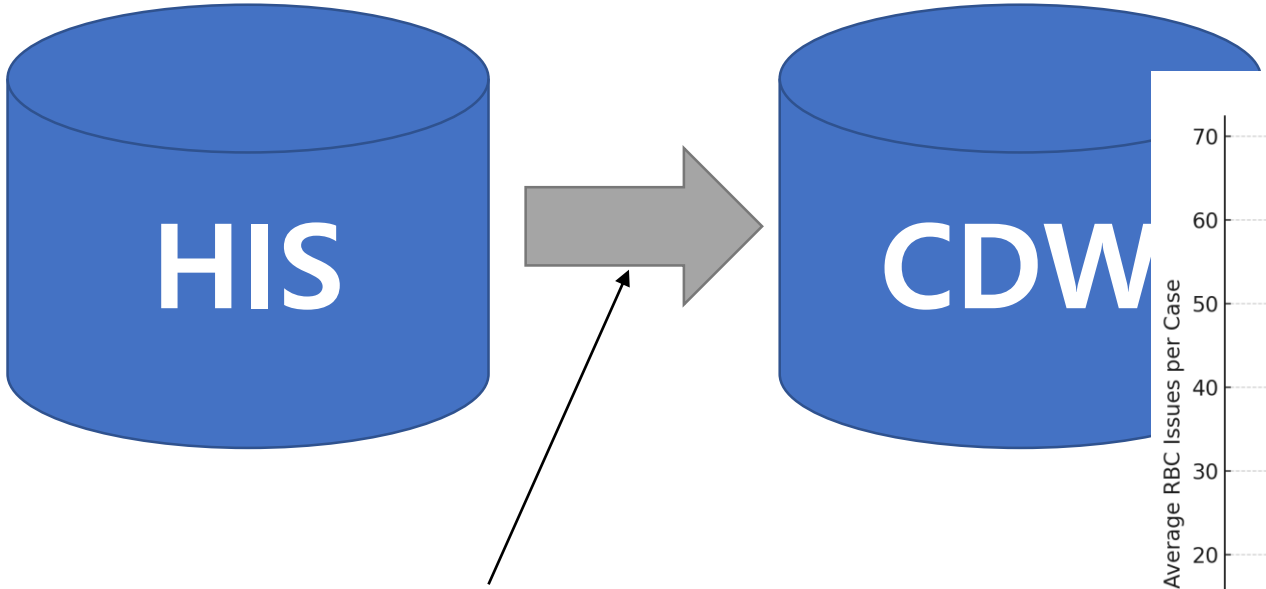


Example of interactive visualization: Blood glucose level monitoring system at SNUH

Dynamic Visualization

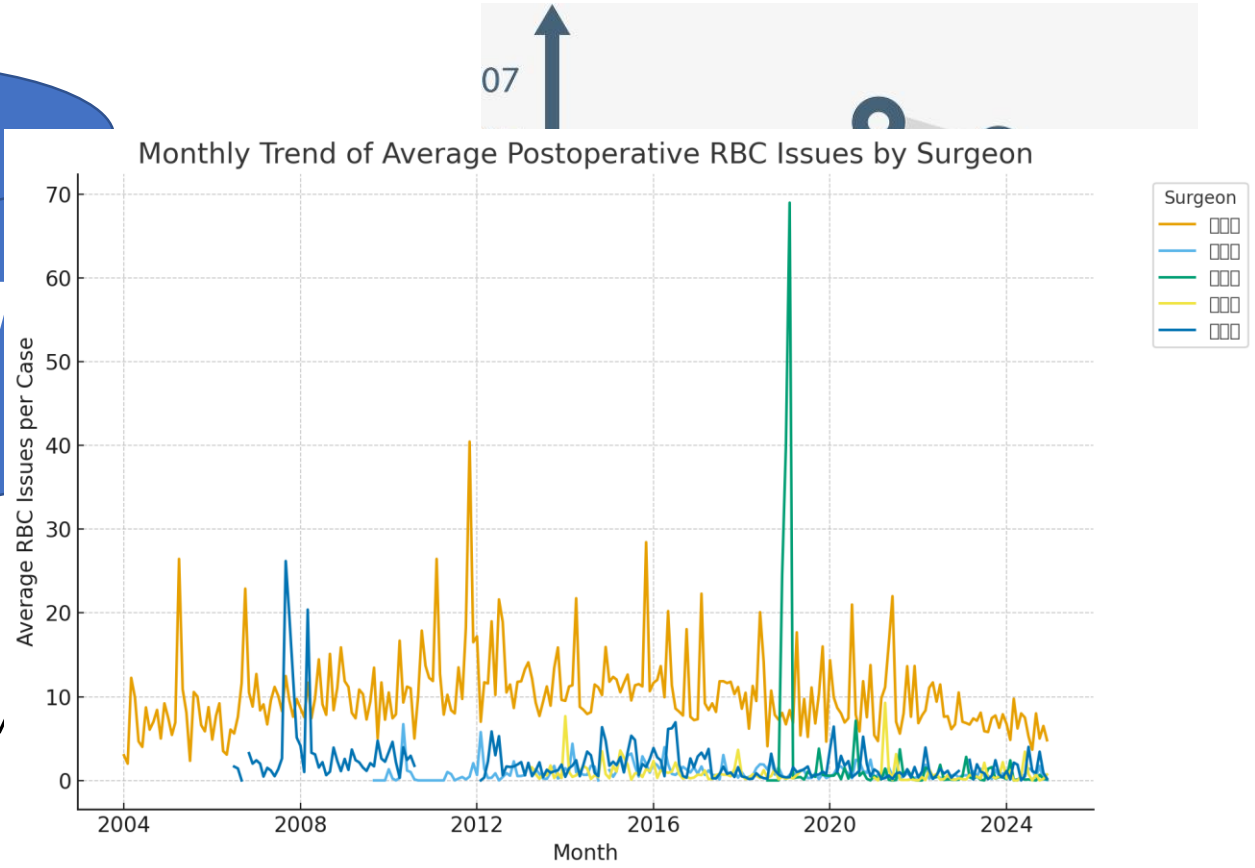
You can view the blood transfusion status by surgeon, the blood transfusion status for each surgeon for the past 10 years for the same surgery, and the blood waste status in real time, and you can inform clinicians of this in various ways.

Dynamic Visualization



Data update by 1 day batch

PBM



Topic 3: PBM Implementation in Hospital Information System

Key Message is...

We've demonstrated the actual implementation of the PBM module in a hospital information system. With the concept of nudging, rather than forcing it, PBM can be flexibly applied to clinicians.

Topic 4

AI/ML in Patient Blood Management

Artificial Intelligence and Predictive Analytics Data-Driven Decision-Making

NARRATIVE REVIEW ARTICLE

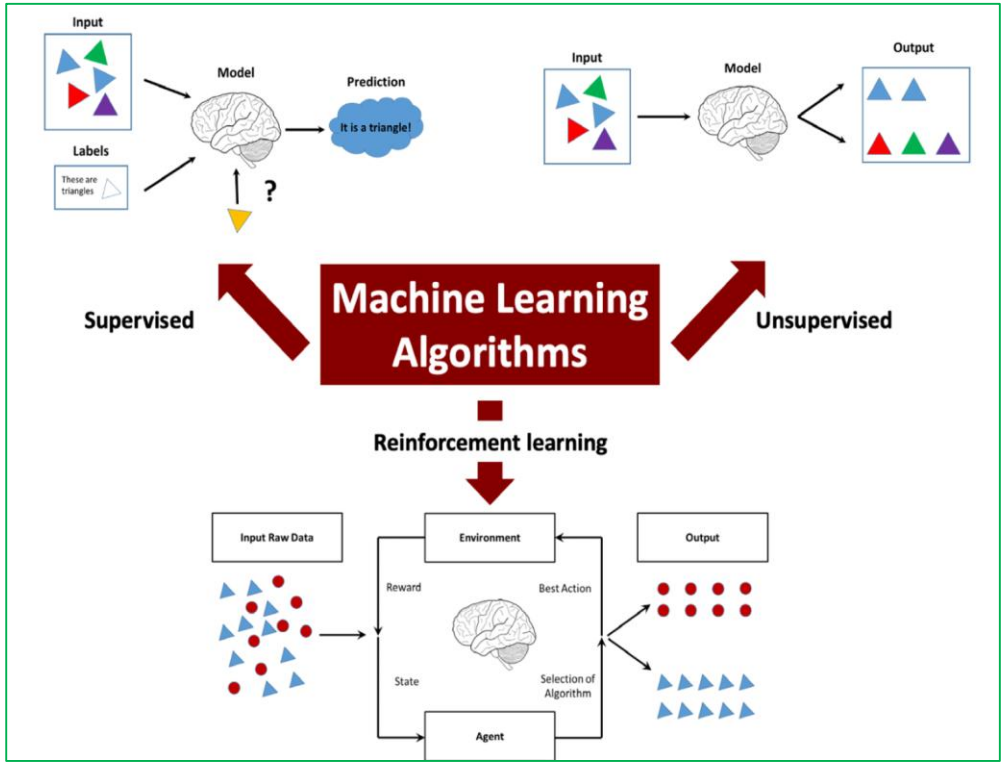
Artificial Intelligence and Machine Learning in Patient Blood Management: A Scoping Review

Jens M. Meier, MD, and Thomas Tschoellitsch, MD

Machine learning (ML) and artificial intelligence (AI) are widely used in many different fields of modern medicine. This narrative review gives, in the first part, a brief overview of the methods of ML and AI used in patient blood management (PBM) and, in the second part, aims at describing which fields have been analyzed using these methods so far. A total of 442 articles were identified by a literature search, and 47 of them were judged as qualified articles that applied ML and AI techniques in PBM. We assembled the eligible articles to provide insights into the areas of application, quality measures of these studies, and treatment outcomes that can pave the way for further adoption of this promising technology and its possible use in routine clinical decision making. The topics that have been investigated most often were the prediction of transfusion (30%), bleeding (28%), and laboratory studies (15%). Although in the last 3 years a constantly increasing number of questions of ML in PBM have been investigated, there is a vast scientific potential for further application of ML and AI in other fields of PBM. (Anesth Analg 2022;135:524–31)

GLOSSARY

AI = artificial intelligence; **AUC** = area under the curve; **ECG** = electrocardiogram; **ICU** = intensive care unit; **ML** = machine learning; **PBM** = patient blood management; **PRISMA** = Preferred Reporting Items for Systematic Reviews and Meta-Analyses; **ROC** = receiver operating characteristic



- AI and Machine learning models can enhance PBM by prediction of bleeding and transfusion, outcome prediction, decision support(Hemoglobin Determination and Laboratory Studies Coagulopathy). This trend will likely expand, enabling continuous quality improvement and benchmarking of PBM practices across institutions.

Article

AI models collapse when trained on recursively generated data

https://doi.org/10.1038/s41586-024-07566-y

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Ilia Shumailov[1,8]✉, Zakhar Shumaylov[2,8]✉, Yiren Zhao[3], Nicol
& Yarin Gal[1]✉

Stable diffusion revolutionized image creation from de
GPT-3(.5) (ref. 2) and GPT-4 (ref. 3) demonstrated high p
of language tasks. ChatGPT introduced such language m
clear that generative artificial intelligence (AI) such as la
is here to stay and will substantially change the ecosyste
Here we consider what may happen to GPT-{*n*} once LLM
found online. We find that indiscriminate use of model-
causes irreversible defects in the resulting models, in w
content distribution disappear. We refer to this effect as
that it can occur in LLMs as well as in variational autoenc
mixture models (GMMs). We build theoretical intuition
portray its ubiquity among all learned generative mode
must be taken seriously if we are to sustain the benefits of training from large-scale data scraped from the web. Indeed, the value of data collected about genuine human interactions with systems will be increasingly valuable in the presence of LLM-generated content in data crawled from the Internet.

What is model collapse?

Definition 2.1 (model collapse). Model collapse is a degenerative process affecting generations of learned generative models, in which the data they generate end up polluting the training set of the next generation. Being trained on polluted data, they then mis-perceive reality. The process is depicted in Fig. 1a. We separate two special cases: early model collapse and late model collapse. In early model collapse, the model begins losing information about the tails of the distribution; in late model collapse, the model converges to a distribution that carries little resemblance to the original one, often with substantially reduced variance.

This process occurs owing to three specific sources of error compounding over generations and causing deviation from the original model:

- **Statistical approximation error.** This is the primary type of error, which arises owing to the number of samples being finite, and disappears as the number of samples tends to infinity. This occurs because

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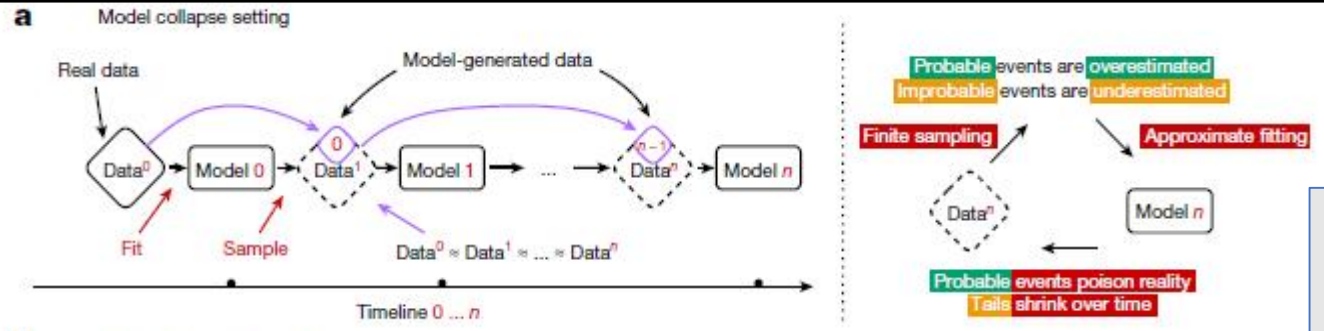
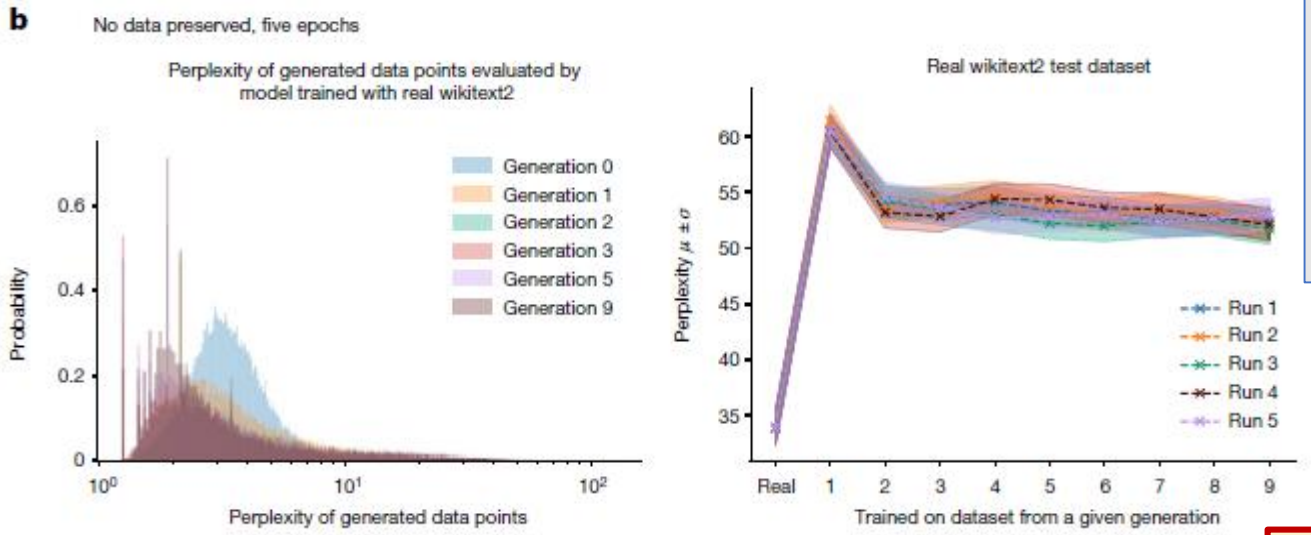
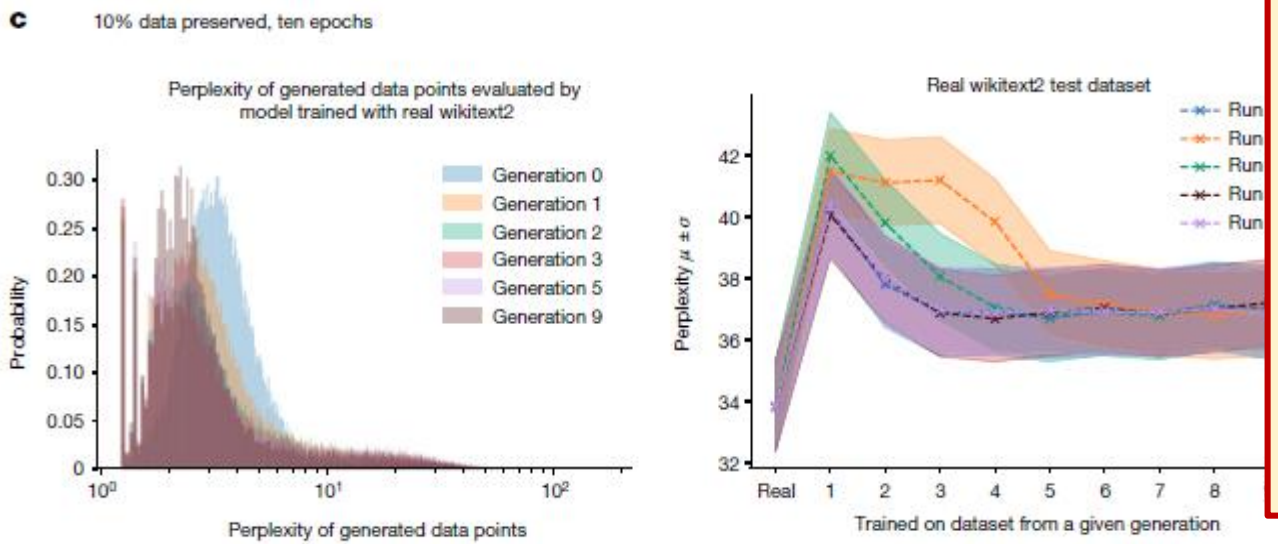






We demonstrate that it must be taken seriously if we are to sustain the benefits of training from large-scale data scraped from the web. Indeed, the value of data collected about genuine human interactions with systems will be increasingly valuable in the presence of LLM-generated content in data crawled from the Internet.

When seeking to gain accurate insights into PBM through AI, repetitively applying existing data and attempting to find new target values using new models will only lead to repeated, undesirable results. This suggests that AI can play a significant role in critical areas like PBM through the continuous updating and accumulation of real-time patient data. This is something we must consider when integrating PBM with healthcare IT.

Topic 4: AI and ML in Patient Blood Management

Key Message is…

The application of AI and ML in PBM is not optional, but essential. Simply leveraging these capabilities to find meaningful insights can be a very risky approach. To overcome this problem, we need standardized, high-quality patient data that is continuously generated.

Topic 5

Conclusions

Conclusions

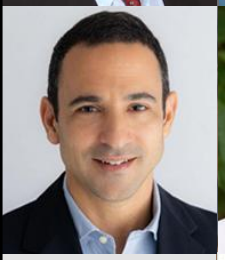
- If standardized HIS data can be merged with PBM related data, we can make potent and meaningful Clinical Decision Support System(CDSS) for patient safety.
- Genomic precision medicine platform can be introduced to PBM to identify various omics changes following the administration of blood and blood-related products to It would be a significant benefit for improvement of PBM.(Improving patient outcomes, reduce costs, and use blood resources more efficiently)
- We've demonstrated the actual implementation of the PBM module in HIS. With the concept of nudging, rather than forcing it, PBM can be flexibly applied to clinicians.
- Development of a standard integration module enables national PBM and PBM related KPIs tracking. It will support comprehensive performance evaluation of the overall PBM project via comparative studies
- **The future of PBM will be more patient-centric, technology-optimized, and focused on minimizing unnecessary transfusions through harmonious integration with healthcare IT.**

KPBM
Korean Society for Patient Blood Management

2025 KPBM

2025 KOREAN SOCIETY FOR PATIENT BLOOD MANAGEMENT ANNUAL SYMPOSIUM





Thank you!

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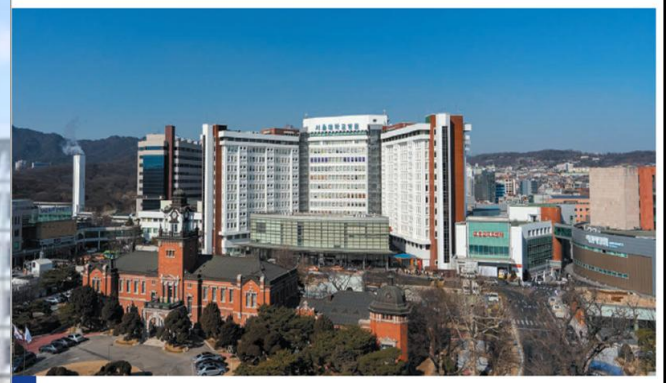

FOCAL POINT ON AI & BIG DATA HEALTHCARE IN KOREA

THE FUTURE IS BRIGHT FOR PRECISION MEDICINE IN SOUTH KOREA

SEOUL NATIONAL UNIVERSITY HOSPITAL is spearheading efforts to integrate clinical research and medical care.

For more than a century, Seoul National University Hospital (SNUH) has played a leading role in advancing medicine and healthcare. Among their many breakthroughs, SNUH doctors generated and delivered South Korea's first IVF baby, and performed the country's first successful liver transplantation. In 2018 they introduced a liver cancer detection method that can improve diagnostic accuracy by more than 30 per cent.

The hospital is a thriving medical innovation hub that makes the most of technologies related to precision medicine and medical artificial intelligence.

"Medicine is undergoing a revolution," says Youngil Koh, a haematologist at SNUH who leads several genome-health data projects at the Office of Hospital Information and Center for Precision Medicine. "The information we gather in clinical practice is becoming digitized in every aspect and can be utilized to improve patient care."

The hospital's digital health systems are exemplified by the work of Hyung-Chul Lee and Chul-Woo Jung, anaesthesiologists at SNUH, who launched VitalDB and the Vital Recorder in November 2017. This is an open-access repository of vital signs data from patients under general anaesthesia.

THE DRIVE TO STANDARDIZE CLINICAL DATA IS A NATIONAL-LEVEL ACTIVITY, AND SNUH IS THE LEADING INSTITUTION ON THIS PROJECT.

VitalDB is expected to be a valuable resource for predictive models for patient outcomes, much like the MIMIC database from the MIT Lab for Computational Physiology has became a go-to source for health data after it compiled more than 40,000 anonymized patients admitted to intensive care units in Boston between 2001 and

Kyung Hwan Kim and Youngil Koh, presenters at the Global Genomics Forum at HIMSS 2019, with members of the SNUH Hospital Information Systems Team.

The importance of standardizing clinical data