

MEDIA RELEASE

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For Immediate Publication

NUHS unveils novel AI platform to strengthen medication safety and streamline pharmacy workflows

Four AI tools reduce manual workload across medication reconciliation, triage and verification, enabling safer, faster care and freeing pharmacists for complex clinical roles

SINGAPORE — The National University Health System (NUHS) has introduced a cluster-wide AI-powered platform to strengthen medication safety, streamline pharmacy workflows and enable pharmacists to focus on higher-value clinical care. Known as the NUHS Cluster AI in Pharmacy (NCAIP) platform, the system brings together four AI tools that support key pharmacy services such as medication reconciliation, triage and verification. These processes are traditionally manual, time-intensive and reliant on fragmented data sources.

Designed as a scalable platform, NCAIP also enables new pharmacy AI tools to be piloted and introduced over time, continuously expanding its capabilities.

Each year, NUHS pharmacy services support about 1.2 million residents in the western region, a demand that is expected to increase as the population ages and medication regimens become more complex.

Delivering measurable impact at scale

Across NUHS, pharmacists currently spend over **350 hours each week** on admission and discharge medication reconciliations, **190 hours each week** on routine triage and counselling of low-complexity prescriptions, and about **310 hours weekly** verifying inpatient medication orders.

With the introduction of NCAIP:

- In-person dispensing may be reduced by **up to 20 per cent**, while ensuring patients who need pharmacists' assistance and counselling services are prioritised
- In the initial phase of the NCAIP project, up to 94 manhours can be saved per week with MedTriage, equivalent to **annual cost savings of SG\$229,690**
- In its final phase, with all tools deployed, up to **850 pharmacist manhours** can be saved per week, amounting up to **SG\$2mil in annual cost savings**

These productivity gains enable pharmacists' time to be refocused to where it matters:

- Managing complex clinical cases and high-risk patients
- Expanding pharmacist-led ambulatory clinics and chronic disease management services
- Participating more actively in multidisciplinary ward rounds and care planning

- Taking on expanded clinical roles in precision medicine, pharmacogenomics and personalised therapeutics
- Managing rising healthcare demands arising from Singapore's transition to a super-aged society
- Enhancing patient education, medication adherence and transition-of-care services

"The NCAIP platform represents a significant step towards a more integrated, technology-enabled pharmacy practice — one that delivers safer and more personalised care to our patients," said **Ms Kimmy Liew, Group Chief Pharmacist, NUHS**.

Bringing data together for better pharmacy care

Today, pharmacists must review and reconcile information across multiple systems, including the National Electronic Health Record, Next Generation Electronic Medical Record, discharge summaries, prescriptions, clinical notes and lab results to build an accurate medication history for each patient.

This creates significant cognitive burden, introduces variability in decision-making and limits the scalability of pharmacy services.

The NCAIP platform addresses this by integrating and analysing data from these sources to provide a unified, context-aware view of each patient, enabling faster and more consistent clinical decisions.

The platform is built on NUHS's ENDEAVOUR AI system, which enables real-time data integration across the cluster. It serves as a scalable foundation that allows new pharmacy AI tools to be developed, piloted and introduced over time.

"ENDEAVOUR AI was originally developed to integrate operational data across NUHS, and its scalability and governance framework made it a strong foundation for NCAIP," said Dr James Lee, Deputy Group Chief Technology Officer, Artificial Intelligence Office, NUHS.

"We placed strong emphasis on interoperability and safeguards, including access controls and human-in-the-loop review to ensure AI is applied safely and responsibly in clinical workflows."

Smarter pharmacy with four AI tools

The NCAIP platform comprises four AI tools designed to address specific pain points across pharmacy workflows:

- **Admission MedRecon and Discharge MedRecon**
For medication reconciliation, Admission MedRecon and Discharge MedRecon compare medication lists across care settings and flag clinically relevant changes for pharmacist review. In Phase 1 validation studies, they achieved **over 88 per cent and 90 per cent accuracy** respectively.
- **MedTriage**
MedTriage identifies patients who require pharmacist counselling, allowing those with low-complexity prescriptions to use self-guided options and collect

medications more quickly. This reduces waiting time while ensuring patients with complex needs receive appropriate attention. In Phase 1 validation studies, MedTriage demonstrated **100 per cent accuracy** in flagging patients who need in-person counselling.

- **MedVerify**
MedVerify reviews medication orders for dosing, contraindications and drug interactions, highlighting cases that require pharmacist intervention. It achieved **over 95 per cent accuracy** in initial studies.

All AI-generated outputs are designed as **recommendations**, with pharmacists retaining final clinical decision-making responsibility.

A future ready pharmacy workforce

By reducing the time spent on manual and administrative processes, the platform enables pharmacists to focus on higher-value clinical responsibilities.

This includes expanding capabilities in areas such as pharmacogenomics and leading transdisciplinary care for chronic conditions such as heart failure, diabetes and renal disease.

“By combining AI capabilities with human expertise, we are transforming how pharmacists deliver patient care efficiently and safely, refocusing our time on higher-value and more-complex work,” said Mr Tan Chwee Huat, Consultant Pharmacist, Alexandra Hospital (AH), and Project Director for the NCAIP platform.

“The NCAIP project allows our pharmacists to practise at the top of their license and aligns with our commitment to ensure our workforce remains resilient and responsive to patient needs.”

Chinese Glossary

National University Health System (NUHS)	国立大学医学组织 (国大医学组织)
NUHS Cluster AI in Pharmacy (NCAIP) platform	国大医学组织药剂人工智能平台
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About the National University Health System (NUHS)

The National University Health System (NUHS) aims to transform how illness is prevented and managed by discovering causes of disease, development of more effective treatments through collaborative multidisciplinary research and clinical trials, and creation of better technologies and care delivery systems in partnership with others who share the same values and vision.

Institutions in the NUHS Group include the National University Hospital, Ng Teng Fong General Hospital, Jurong Community Hospital, Alexandra Hospital and the upcoming Tengah General and Community Hospital; three National Specialty Centres – National University Cancer Institute, Singapore (NCIS), National University Heart Centre, Singapore (NUHCS) and National University Centre for Oral Health, Singapore (NUCOHS); the National University Polyclinics (NUP); Jurong Medical Centre; and three NUS health sciences schools – NUS Yong Loo Lin School of Medicine (including the Alice Lee Centre for Nursing Studies), NUS Faculty of Dentistry and NUS Saw Swee Hock School of Public Health.

With member institutions under a common governance structure, NUHS creates synergies for the advancement of health by integrating patient care, health science education and biomedical research. As a Regional Health System, NUHS works closely with health and social care partners across Singapore to develop and implement programmes that contribute to a healthy and engaged population in the Western part of Singapore.

For more information, please visit www.nuhs.edu.sg.