

SINGAPORE BIODESIGN



National Nursing Innovation Study Playbook

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FOREWORD

Nurses stand at the very heart of patient care. Their constant presence across the care continuum allows them to respond to evolving needs with compassion, skill, and resilience. Positioned at this frontline, nurses possess a unique vantage point: they see firsthand the realities, gaps, and opportunities within our healthcare system. This perspective equips them not only to deliver care, but also to envision and drive meaningful change—whether through practice-based improvements at the bedside, innovative models of care, or system-level redesign across organisations.

As healthcare grows increasingly complex and patient needs continue to evolve, innovation has become an essential competency for nurses. Their ability to identify unmet needs and translate them into solutions has the potential to profoundly impact patients and communities alike. By equipping nurses with the mindset, skills, and frameworks for innovation, we empower them to elevate patient outcomes, strengthen engagement, and advance professional practice.

Fostering a culture that values curiosity, collaboration, and courageous thinking enables nurses to extend their influence beyond individual encounters. Through nursing innovation, the impact of care can be scaled across institutions and into the community—addressing pressing challenges such as rising demand, ageing populations, and the need for more integrated and sustainable care.

Singapore has made significant strides in healthcare innovation, and while nurses have always been natural innovators, there remains untapped potential within the profession. By harnessing this potential, we can unlock new possibilities for care delivery and ensure that nursing continues to play a transformative role in shaping the future of healthcare.

We therefore acknowledge and appreciate the efforts of Singapore Biodesign in supporting and advancing nursing-led innovation. This National Nursing Innovation Study and accompanying play-book provide a valuable resource, offering practical guidance for healthcare organisations seeking to embed innovation within nursing practice. By showcasing pathways, enablers, and success stories, it inspires and equips nurses to develop ideas that can transform care.

For nursing innovation to be sustainable, it requires coordinated support from healthcare clusters, institutions, departments, and supervisors, along with resources such as funding, training, and recognition initiatives. By highlighting their contributions, we affirm that nursing innovation is valued and vital for advancing healthcare in Singapore.

To all nurse innovators, we encourage you to embrace your vital role in shaping the future of healthcare. Your insights from the bedside, your deep understanding of patient journeys, and your unwavering dedication uniquely position you to drive meaningful change through innovative solutions that address real healthcare challenges. Take advantage of the support systems, partnerships and funding opportunities available to you.

Together with the nursing community and ecosystem partners, we can continue to build an environment where nursing innovation flourishes, strengthening our healthcare system and improving the lives of patients and the wider community.

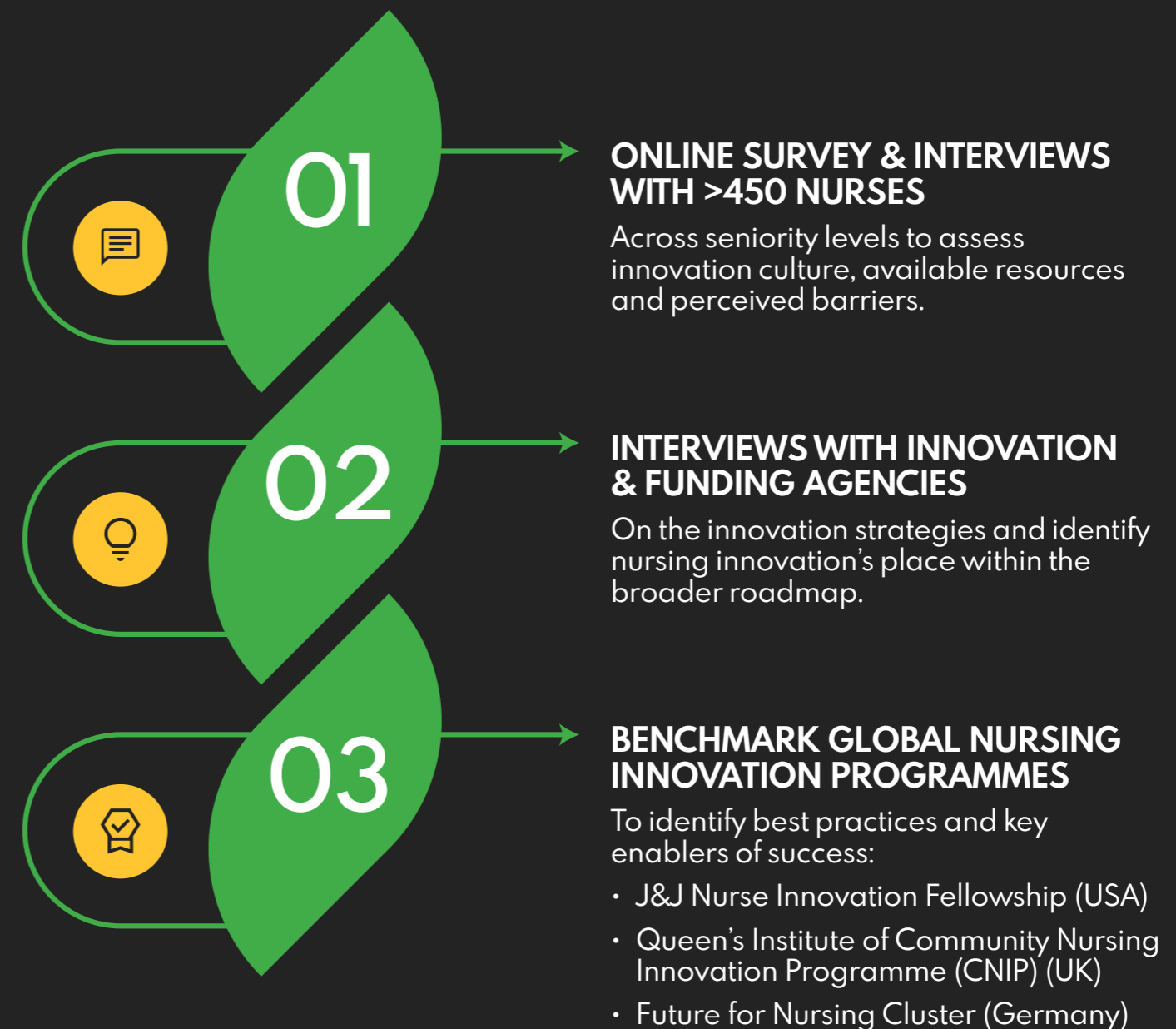
Sincerely,

Prof Tan Say Beng
Executive Director,
NMRC
Executive Director,
Research & Innovation,
MOHH

Paulin Koh
Chief Nursing Officer,
MOH

AT A GLANCE

A national-level study led by Singapore Biodesign to strengthen Singapore's nursing innovation landscape by identifying the unique challenges, enhancing capability development, and shaping strategies that elevate the impact of nursing-led innovation across all healthcare clusters.



OBJECTIVES

Through the Nursing Innovation Study, Singapore Biodesign (SB) seeks to understand the current state of nursing innovation and identify gaps that should be addressed.



PRIOR EDUCATION

Is there a way to improve nursing innovation education?

Without education and training on innovation, it can be challenging for nurses to take part in innovation projects and initiatives. Proper education and training is the foundation to developing a culture of innovation.



RESOURCES AVAILABLE AND ACCESSIBILITY

What resources institutions provide nurses with? Can nurses access resources easily? Are nurses aware of these resources?

Hospitals and institutions must provide nurses with the resources (e.g., support from management, funding, training, etc.) to engage in innovative projects and initiatives.



RESOURCES AVAILABLE – ADDITIONAL SUPPORT NEEDED

What support and resources would encourage them to embark on innovation projects that is not yet available in their institutions?



TIME ALLOCATED FOR INNOVATION

Do nurses have time during their working hours to work on innovation? What type of projects do they undertake?



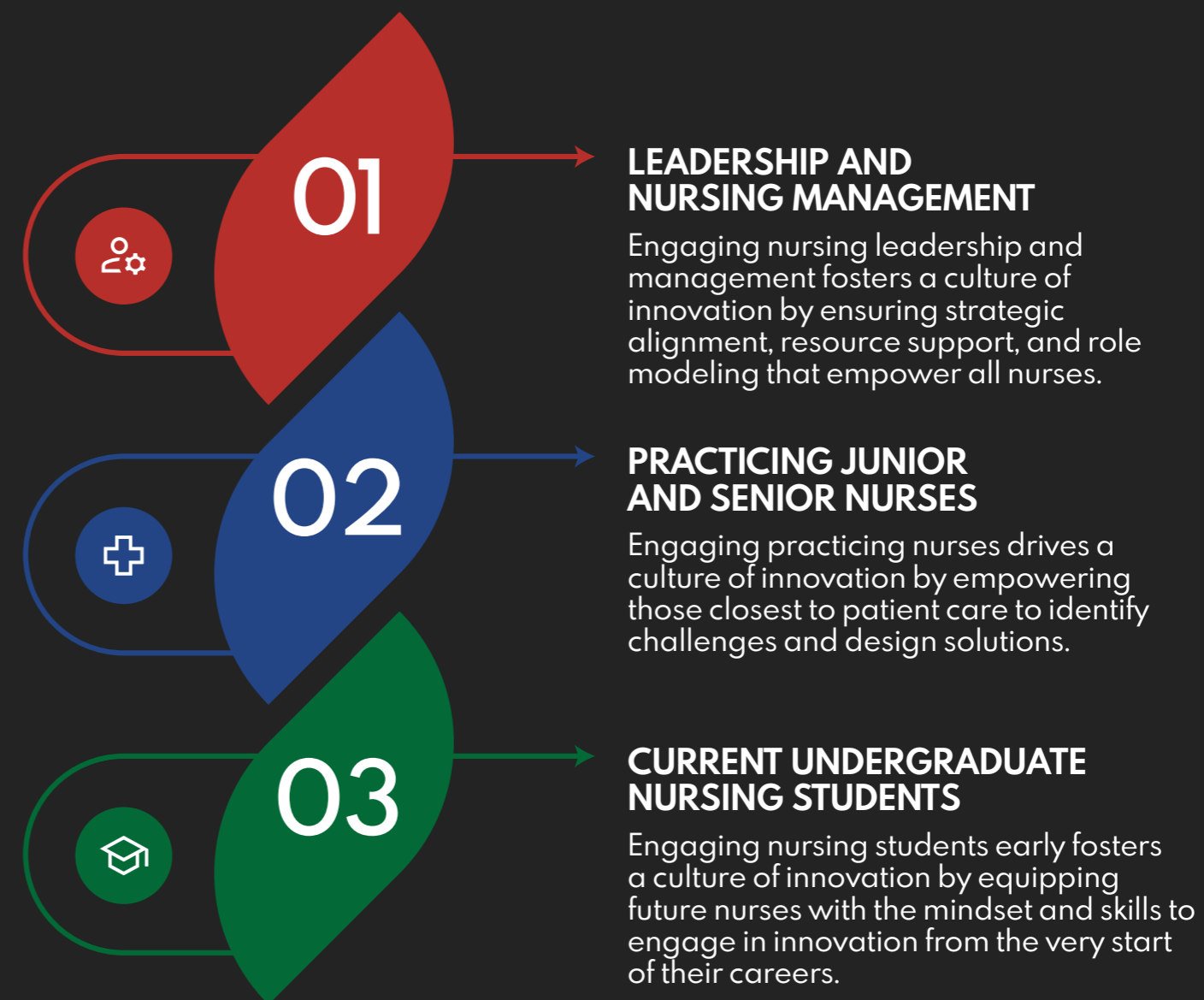
RECOGNITION OF NURSING INNOVATION AND OUTCOMES

What are the outcomes of nursing innovation projects and initiatives? Are nurses incentivised to be innovative?

The culture of innovation that healthcare institutions promote is often linked to their topics of interest (e.g., digital solutions, workflow management tools, market-based solutions, etc.): any form of innovation is a tool to enhance patient care and reflect nurses' core value on ensuring quality of care to patients.

AREAS OF OPPORTUNITIES: RECOMMENDATION FRAMEWORK

To foster a culture of nursing innovation, targeted actions have been identified to remove barriers across all levels of nursing, from nursing students to leaders, to drive transformative change.



For each level, the study has developed tailored solutions to the identified challenges and specified the outcomes:



Areas of opportunities



Strategic options

STRATEGIC OPTIONS

01 • Leadership and nursing management



Insights from nurses indicate that enhanced clarity around organizational innovation themes and strategic priorities could enable more aligned efforts, foster greater confidence and participation in innovation.

Areas of opportunities	Strategic innovation framework and priorities
<p>Nurses on the ground have shared that additional guidance on the organization/ cluster's innovation themes and strategic priorities would help them better focus their efforts and contribute more confidently.</p> <p>This can lead to reduction of duplicated effort, inconsistent project selection, and increased engagement in innovation initiatives.</p>	<p>01 Develop a clear, cluster-endorsed innovation framework. This can be a simple one-page document defining</p> <ol style="list-style-type: none"> innovation versus QI organizational priorities and focus areas e.g. patient safety, nursing wellbeing, digital health, workflow redesign expected outcomes and evaluation criteria. <p>02 Communicate innovation priorities via multi-channel platforms e.g. staff intranet, mobile apps, ward-level posters, team meetings.</p> <p>03 Integrate innovation priorities into training and onboarding e.g. including definitions, priorities, and thematic areas in mandatory nursing orientation programs, annual competency refreshers, Innovation workshops.</p>

When financial metrics such as ROI are taught and framed within the nursing practice context, nurses are better able to recognize their relevance and apply them effectively to their innovation initiatives.

Areas of opportunities	ROI awareness and nursing context
<p>There is an opportunity to provide clearer guidance on how ROI considerations apply to innovation projects, as some frontline teams may be uncertain about the feasibility or viability of their ideas.</p> <p>Also, nurses working in niche specialties have indicated that the smaller scale of their practice areas can make it harder to demonstrate traditional ROI, and they would benefit from additional guidance on how to position their innovations.</p>	<p>04 Reframe ROI using nursing language, raising awareness on the importance of ROI in the context of nursing innovation, with the end goal in mind, through workshops / courses.</p> <p>05 Develop entry-level nursing ROI toolkit which can focus on strategic levers like clinical impact, workforce impact, operational impact, financial impact.</p> <p>06 Adopt a value-focused innovation assessment framework, which can be a multi-dimensional evaluation model for innovation projects considering factors like patient impact, staff workflow efficiency and time savings, organizational strategic priorities, cost-benefit analysis vs just pure financial ROI (short and long-term).</p>

There are ample opportunities to raise greater awareness of successful innovation projects and integrate innovation more intricately into career pathways while communicating clearly to nurses.

Areas of opportunities	Showcase success and innovation in career pathway
<p>Nurses involved in innovation have expressed that increased acknowledgement and spotlighting of their work would further motivate and sustain innovation efforts across the organisation.</p> <p>Feedback indicates that nurses may benefit from clearer guidance on how involvement in innovation aligns with promotion pathways and professional development.</p>	<p>07 Create or leverage existing platforms where nurses can easily share about their successful innovation projects. More importantly, ensure these platforms are frequent and accessible e.g. once-a-month online sharings, roadshows, social media.</p> <p>08 Develop awards which are ringfenced for nursing innovation.</p> <p>09 Integrate innovation achievements into promotion and career pathways, making this visible to nurses.</p> <p>10 Develop an institutionalized innovation pathway for where nurses who want to majorly pursue innovation as part of their career.</p>

STRATEGIC OPTIONS

02 • Practicing junior and senior nurses



The availability of a QI and innovation toolkit has been highly requested by nurses of all seniorities as it can serve as an easy go-to resource when they kickstart their innovation journey.

Areas of opportunities	Innovation toolkits
<p>Nurses have indicated that the boundaries and connections between QI and innovation may not always be immediately clear, and enhanced clarity could improve confidence and alignment.</p> <p>It is not uncommon for nurses to have little to no understanding of basic innovation concepts and project management frameworks.</p>	<p>11 To level the playing field, clusters could develop a innovation toolkit which can clearly define and elaborate key definitions, required frameworks, workflows, project management concepts, decision trees, and real clinical examples.</p> <p>For example, the toolkit can break down innovation concepts (design thinking, prototyping, ideation, user research) using nursing-focused examples.</p> <p>This makes concepts approachable even for those without prior exposure.</p>

Nurses, especially those in time-intensive environments like intensive care units or high dependency units, will benefit from strategic guidelines that will provide much needed protected time for promising innovative initiatives.

Areas of opportunities	Protected time guidelines
<p>Some nurses feel they struggle to commit time to innovation due to their workload and personal responsibilities, which may limit their ability to take part even when they are highly motivated and have great ideas to contribute.</p>	<p>12 Create comprehensive guidelines for "protected time" which cover type of activities, eligibility criteria, accountability and tracking mechanisms. This can ease the burdens of nursing managers who need to decide if protected time is warranted.</p> <p>The concept of "protected time" may have different definitions and realities in each cluster, therefore can also be "awarded" in various and creative ways, e.g.</p> <ul style="list-style-type: none"> Nurses who have shown past successes in innovation could be awarded more protected time Nurses who have garnered peer support and approval for their project can apply for protected time easier. <p>The J&J Nursing Innovation Fellowship and UK QICN have successfully implemented structured investment in time and resources for nurses pursuing innovation beyond their routine clinical duties.</p>

Engaging practicing nurses drives a culture of innovation by empowering those closest to patient care to identify challenges and design solutions.

Areas of opportunities	Awareness and ambassadorship
<p>Some nurses who are less exposed to innovation may benefit from clearer visibility of how new innovations can positively impact their workflow and work environment.</p>	<p>13 Highlight past examples of nursing innovations through programmes or roadshows. Involve nursing innovators as ambassadors who can share their successful projects.</p>

STRATEGIC OPTIONS

03 • Current undergraduate nursing students

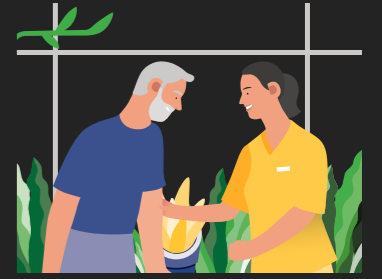


When nursing students are exposed to innovation courses, modules and nursing technologies as part of their curriculum, they will be more equipped once they choose to start their nursing innovation journey.

! Areas of opportunities	📍 Education and exposure
There used to be a lack of mandatory innovation content and programs at the undergraduate nursing level.	14 Enhance curriculum to include innovation courses and modules e.g. SIT's BSN-MSN programme which includes "Innovation & Implementation Science" modules, and NUS ALCNS' BSc (Nursing) curriculum which integrates innovation projects through its coursework.
There used to be little to no opportunities for nursing undergraduates to have exposure to existing innovation and technology.	15 Increase exposure to innovation through collaborations between education institutes and innovation hubs e.g. German Future of Nursing Cluster's SkillsLab and SIT's Design Factory.



STRATEGIC OPTIONS SUMMARY



The study has identified 15 strategic options for the Singapore nursing innovation landscape, which fall into three main categories:

01 SUPPORT TOOLS & FRAMEWORKS

Five strategic recommendations focus on cluster-level innovation frameworks and process to support and accelerate nursing innovation.

- 01 Develop a clear, cluster-endorsed innovation framework. This can be a simple one-page document defining a) innovation versus QI b) organizational priorities and focus areas e.g. patient safety, nursing wellbeing, digital health, workflow redesign c) expected outcomes and evaluation criteria.
- 06 Adopt a value-focused innovation assessment framework, which can be a multi-dimensional evaluation model for innovation projects considering factors like patient impact, staff workflow efficiency and time savings, organizational strategic priorities, cost-benefit analysis, vs pure financial ROI (short and long-term).
- 09 Integrate innovation achievements into promotion and career pathways, making this visible to nurses.
- 10 Develop an institutionalized innovation pathway for where nurses who want to majorly pursue innovation as part of their career.
- 12 Create comprehensive guidelines for "protected time" - proper to each cluster - which cover type of activities, eligibility criteria, accountability and tracking mechanisms. This can ease the burdens of nursing managers who need to decide if protected time is warranted.

02 EDUCATION & TRAINING

Four recommendations propose to enhance Nursing initial and continuous education and to create innovation culture leveraging existing structures in Singapore.

- 03 Integrate innovation priorities into training and onboarding.
- 05 Develop entry-level nursing ROI guide which can focus on strategic levers like clinical impact, workforce impact, operational impact, financial impact.

- 14 Enhance nursing curriculum at undergraduate and postgraduate levels to include innovation courses and modules.
- 15 Increase exposure to innovation through collaborations between education institutes and innovation hubs.

03 AWARENESS & RECOGNITION INITIATIVES

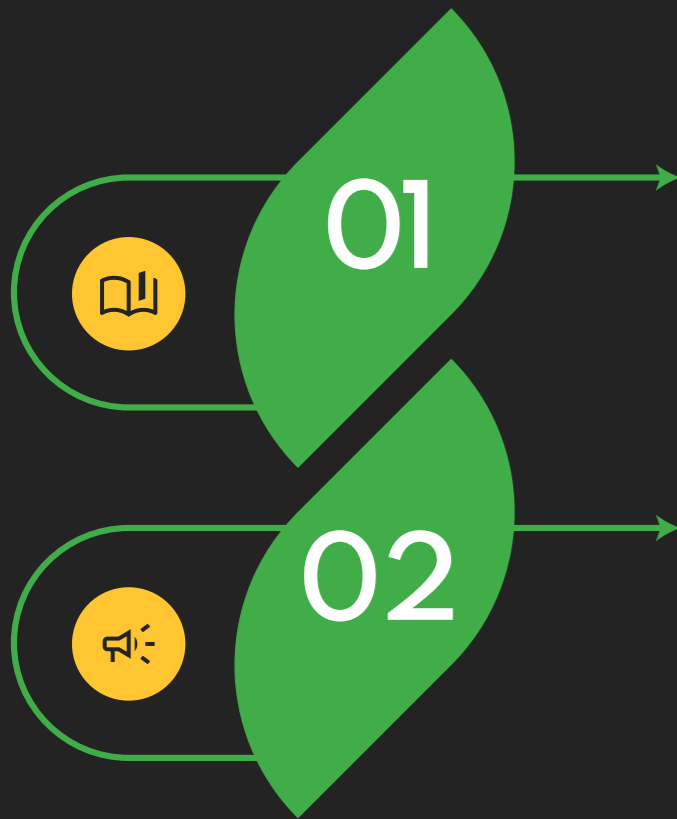
Five recommendation aim at creating increased awareness and recognition of the importance and impact of innovation among the Nursing community.

- 02 Communicate innovation priorities via multi-channel platforms e.g. staff intranet, mobile apps, ward-level posters, team meetings.
- 04 Reframe ROI using nursing language, raising awareness on the importance of ROI in the context of nursing innovation, with end goal in mind, through workshops / courses.
- 07 Create platforms where nurses can easily share about their successful innovation projects. More importantly, ensure these platforms are frequent and accessible.
- 08 Develop awards which are ringfenced for nursing innovation.
- 13 Highlight past examples of nursing innovations through programmes or roadshows. Involve nursing innovators as ambassadors who can share their successful projects.

★ Indicates global innovation standards and practices - based on the international benchmarking conducted

RECOMMENDED NEXT STEPS

Singapore Biodesign will look into advancing improvements and addressing recommendations across two key areas.



01 EDUCATION & TRAINING

Through its existing training platform, Singapore Biodesign has a natural role in developing specific training content and formats that directly addresses the key gaps identified to foster nursing innovation.

02 AWARENESS & RECOGNITION

Singapore Biodesign can leverage existing platforms or new media avenues to improve recognition and awareness of successful nursing innovators.

01 • Education & training

Qualitative skills

The study highlights strong opportunities for SB to further support the development of qualitative skills through existing or new offerings



PROJECT MANAGEMENT

- More than half of the survey respondents indicated “Project Management” as a skill that is needed for them to start engaging in innovation
- As observed in the global innovation nursing hubs, there is increasing focus on project management topics e.g. strategic project planning, change management



BUSINESS ACUMEN

- Nursing innovators often need to navigate people, priorities and politics
- This is especially since impact is only created when adoption of innovative ideas occur
- In the US, the J&J Nursing Innovation Fellowship covers topics like “Influence, persuasion, and negotiation”



GRANT WRITING

- Developing a keen understanding of research grant requirements is crucial for nurses looking to get funded
- An example is the “Grant Writing Immersive Experience” program launched by University of California San Francisco




“ When it comes to grants, nurses are often competing with other healthcare professionals like doctors and clinical scientists... as such there is a need to improve our ability to articulate the innovative and credible ideas through grant writing training.”

STUDY STEERING COMMITTEE MEMBER



Through the survey, both junior and senior nurses expressed similar requests and notably a strong need for project management, clinical trial planning and a structured innovation framework.

The **top 3 skills and knowledge** needed by junior and senior nurses are:

-  Project management
-  Clinical trial planning (2nd place for junior nurses vs 3rd for senior)
-  A structured innovation framework (2nd for senior nurses vs 3rd for junior)

What specific skills or knowledge do you feel you need to develop in order to engage in innovation?

Junior nurses		Senior nurses	
Project management	65	Project management	192
Clinical trial planning	60	A structured innovation framework	185
A structured innovation framework	59	Clinical trial planning	172
Product development	54	Product development	163
Operational planning	48	Operational planning	134
Intellectual property	33	Intellectual property	88
Business planning	30	Market access	80
Market access	25	Regulatory	77
Regulatory	23	Business planning	59

Quantitative skills

The study identified strong opportunities for SB to strengthen support in key quantitative skill areas through existing and future initiatives.



ROI & VALUE PROPOSITION

- ROI has been widely discussed as an area requiring deeper understanding and reframing
- This is especially important as the increasing focus on ROI is a clear indication of the growing maturity of the nursing innovation landscape



FORWARD PLANNING & FORECASTING

- Over 20% of the survey respondents indicated “Business Planning” as a skill that is needed to start engaging in innovation
- In US, the J&J Nursing Innovation Fellowship covers topics like “Financial acumen” and “Planning for execution”



OUTCOMES & METRICS

- Being able to predict and evaluate both primary and secondary outcomes of a project is necessary for nursing innovators
- In the UK, QICN places particular emphasis on this topic; through its Community Nursing Innovation Programme, nurses undergo 3 two-day workshops during the project year which cover topics like “Evaluating Outcomes”

“ We need to give nurses the resources, especially business acumen skills, to bring their solutions to life.”

CHIEF NURSE, 2024-2025 J&J FELLOW

There are ample opportunities for SB to support the nursing innovation landscape through education and training.



TRAINING

Create basic / entry-level content for key areas like Project Management and Grant Writing which are highly demanded




INNOVATION FRAMEWORK

Develop a value-creation framework for innovation that is readily accessible to nurses



COLLABORATIONS

Collaborate with strategic partners to provide nurses with industry exposure and innovation acumen

 Strategic options targeted

02 • Awareness & recognition

There are opportunities for SB to provide recognition to nursing innovators and increase awareness of its engagements and offerings.



RECOGNITION

- Being recognized for innovation projects can be a huge motivation for aspiring and existing nursing innovators
- While this should be done at a systemic level, SB can contribute by creating innovative ways to recognize existing nursing innovators



AWARENESS

- For nurses to be aware of SB's offerings, it will be helpful if SB can find ways to be relatable
- In the US, J&J Nursing Innovation clearly defines what “Nurse-Led Innovation” means, and gives specific and relatable case studies featuring nursing innovator alumni which are easily understandable by aspiring nurses

“ We often see projects of doctors and clinician scientists being featured more prominently across media... surely we can do the same for nurses if there is intent to attract more nurses to innovation.”

STUDY STEERING COMMITTEE MEMBER



Through recognition of successful nursing innovators and utilizing them as ambassadors for the next generation of nurses, SB can positively influence the nursing innovation ecosystem in several ways.



RECOGNITION & AWARDS

- SB can develop creative nursing innovation awards, or even co-brand recognition with strategic partners
- Create a nursing innovation recognition ladder for nursing participants; this can be either through certificate or via SB's website



AWARENESS

- Engage media platform that allows SB to highlight projects done by nurses who are currently / previously affiliated with SB



MENTORSHIP

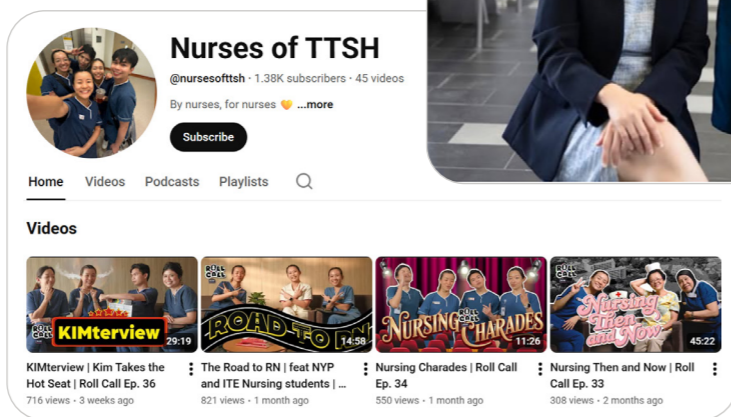
- Build a mentorship culture that allows successful nursing innovators to play a more active mentorship role to upcoming nurses

Strategic options targeted



Example of cluster's strengths - Awareness & recognition

Nursing clusters like NHG Health are keenly aware of the platforms which junior nurses are most in contact with and investing concerted efforts to maintain a presence on social media.

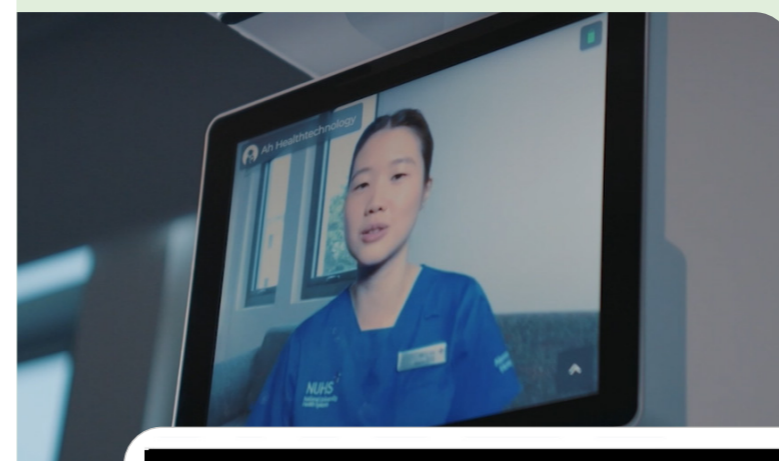
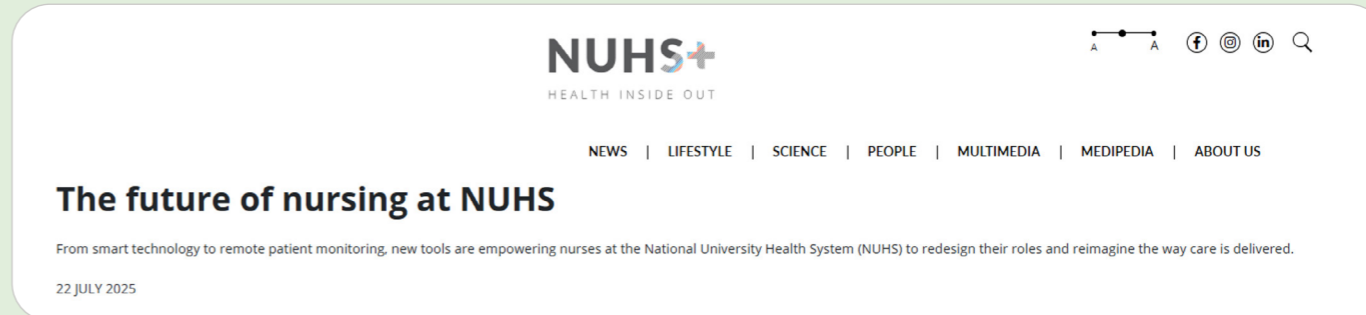
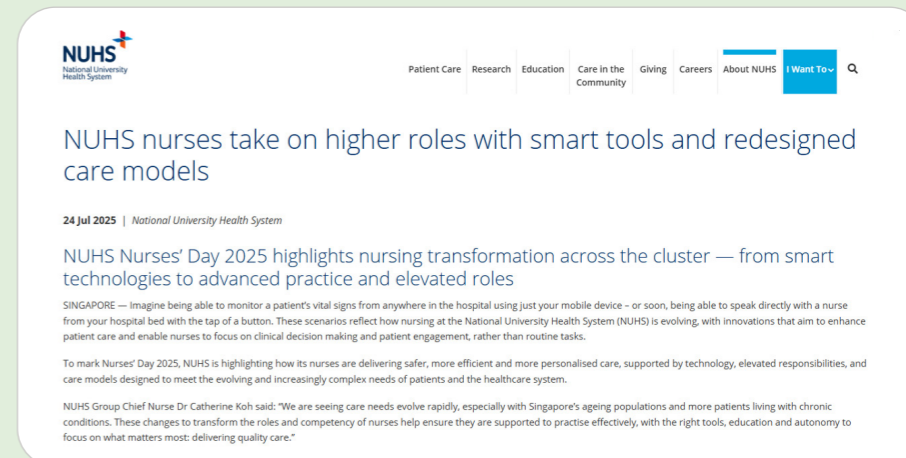


There are opportunities for SB to consider strategic partnerships and collaborations with nursing clusters by leveraging already recognised and well-established social media accounts.

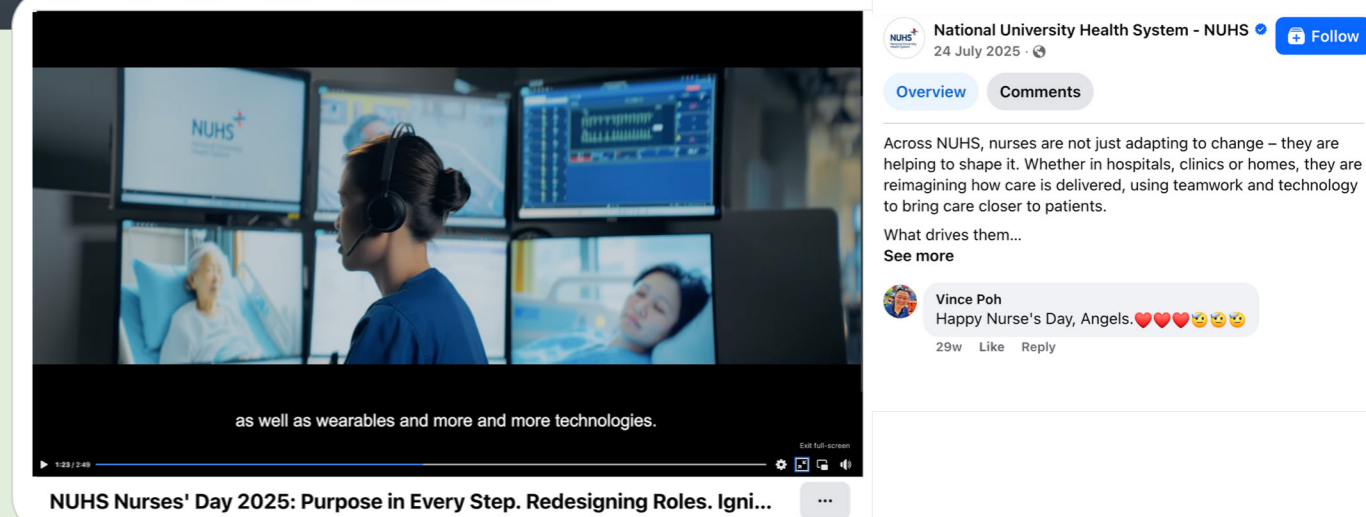


Example of cluster's strengths - Support frameworks & awareness

NUHS cluster, clearly communicates on its multi channel platform the value of innovation both for patient care improvement, and the future of Nursing empowerment.



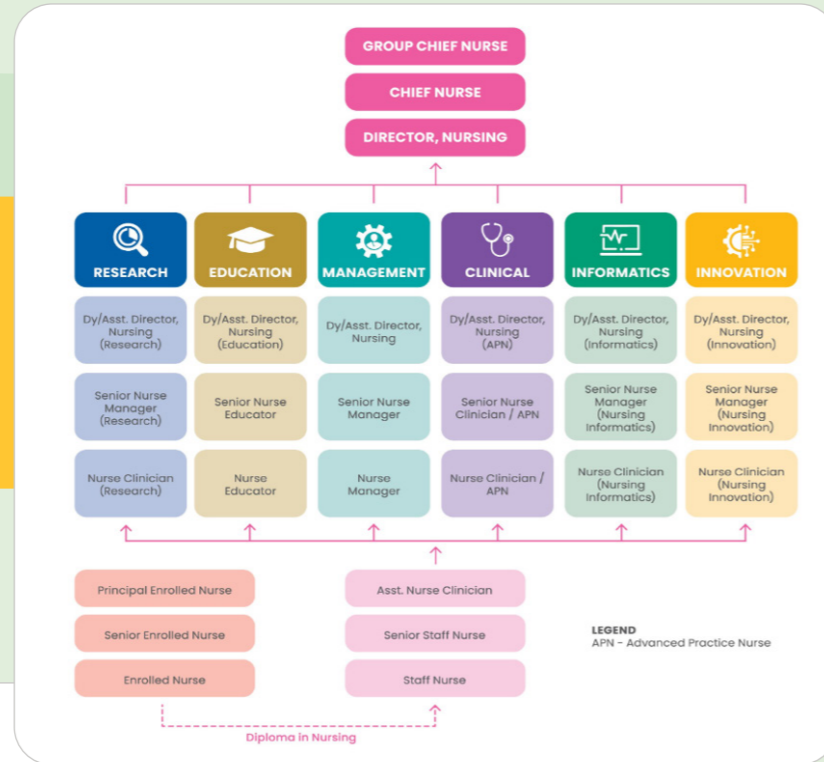
Consistently highlighting certain valued technologies and linking them to Nurse activities (here AI, robotics, remote monitoring etc.) provides greater clarity on Strategic Directions for Nursing innovation, as suggested in Recommendations #1 & 6.



Example of cluster's strengths - Support frameworks & recognition

SingHealth cluster has developed an "Innovation Career Track" for Nurses, already materialization recommendation # 10.

Developed an institutionalized innovation pathway for nurses who wish to focus on innovation in their careers, integrating their accomplishments into career progression so that their efforts are visible and recognized.



THE STRAITS TIMES

SingHealth nurses to get \$5.7m from Wee Foundation for education, skills development

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Wee Foundation director Wee Wei Ling and Senior Minister of State for Health Tan Kiat How serving a nurse food during the SingHealth Nurses' Day celebrations.
ST PHOTO: BRIAN TEO



新加坡中央医院护士钟欣慧参加了专业课程，不仅学习了更多关于医疗创新的知识，也能把所学带到医院的临床实践。(白艳琳摄)

培训课程助护士提升技能 提高工作效率与病患安全

钟欣慧是去年黄氏基金护士节奖项得主之一。她在今年2月参加了资金资助的一个生物设计 (Biodesign) 培训课程，掌握了创新的巧思，并懂得学以致用，把知识应用于护理需求中。

ACKNOWLEDGEMENT

Steering Committee

We gratefully acknowledge the leadership and guidance of our National Nursing Innovation Steering Committee:

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Singapore Biodesign would like to acknowledge the study participants and Biodesign alumni who generously contributed their time and insights through interviews and surveys.

Study lead

SINGAPORE BIODESIGN

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