

Practice Changing Innovations in Endoscopy

Prof Lawrence Khek-Yu Ho

Director, Centre for Innovation in Healthcare, NUHS

Professor & Senior Consultant, Department of Medicine, NUHS

ST 2021

THE STRAITS TIMES

B2 | SINGAPORE

Heng: Biomedical advances here must benefit people, be ethical

S'pore's research investments were visible when
mobilised in Covid-19 battle

ple types of vaccines in Singapore.

Mr Heng also noted that rapid developments in human health and potential will open up new ethical

and system governance, Mr Heng added.

He said Singapore recognises the importance of taking a more human-centric approach to re-

search programme and developing its data infrastructure and capabilities, Singapore aims to use data to predict the risk of diseases upstream, better diagnose

Agenda

- How do endosurgical innovations benefit patients?
- Challenges to adoption of innovations at scale to improve lives
- How do we facilitate adoption of innovations at scale to change practice?

Opinion > Vinay Prasad, MD, MPH

Do 'Robots' Offer Any Clear Surgical Advantage?

A new meta-analysis in the [Annals of Internal Medicine](#) assessed the quality of evidence and outcomes of robot-assisted surgery



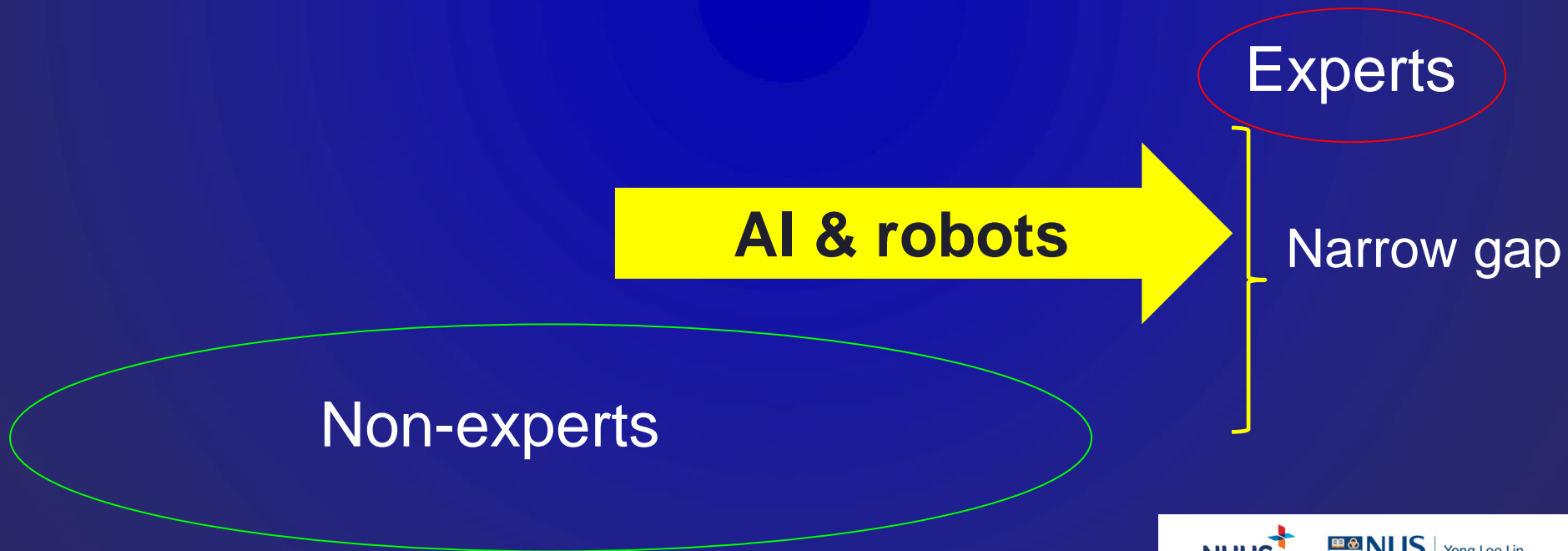
- **Most if not all publications come from expert centres - unlikely to show a difference in outcomes**
- **Outcomes would have been different if studies done in non-expert centres**

The authors conclude this: "There is currently **no** clear advantage with existing robotic platforms, which are costly and increase operative duration. With refinement, competition, and

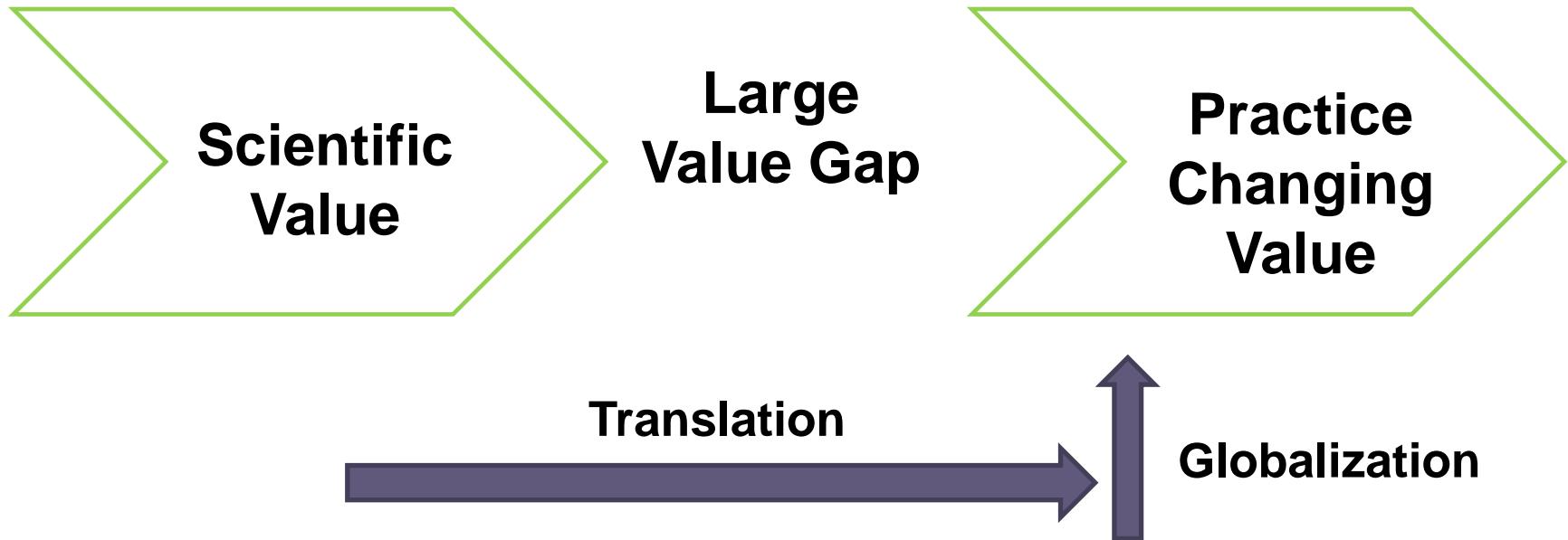
How do endosurgical innovations benefit patients?



- Consistency of care (e.g., between experts vs. non-experts)



Despite these values Innovations alone are not enough

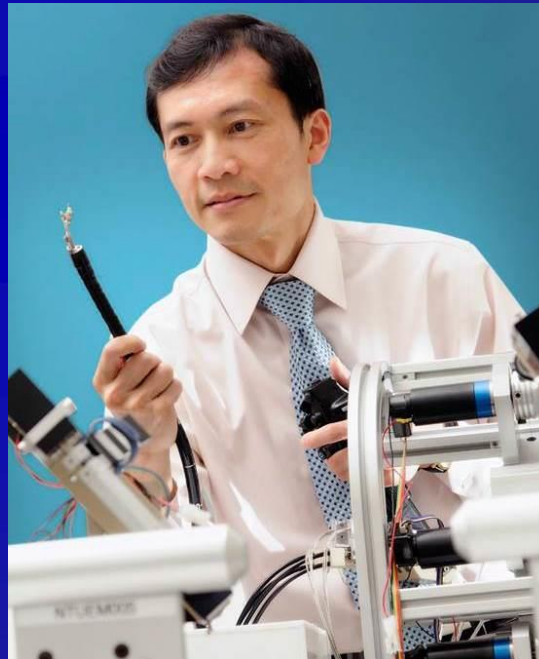


We need scale to improve lives....

Agenda

- How do endosurgical innovation benefit patients?
- Challenges to adoption of innovations at scale to improve lives

Case study



2005

Current Dean of Engineering NTU

How can I
help you in
your clinical
practice?



Endoscopy

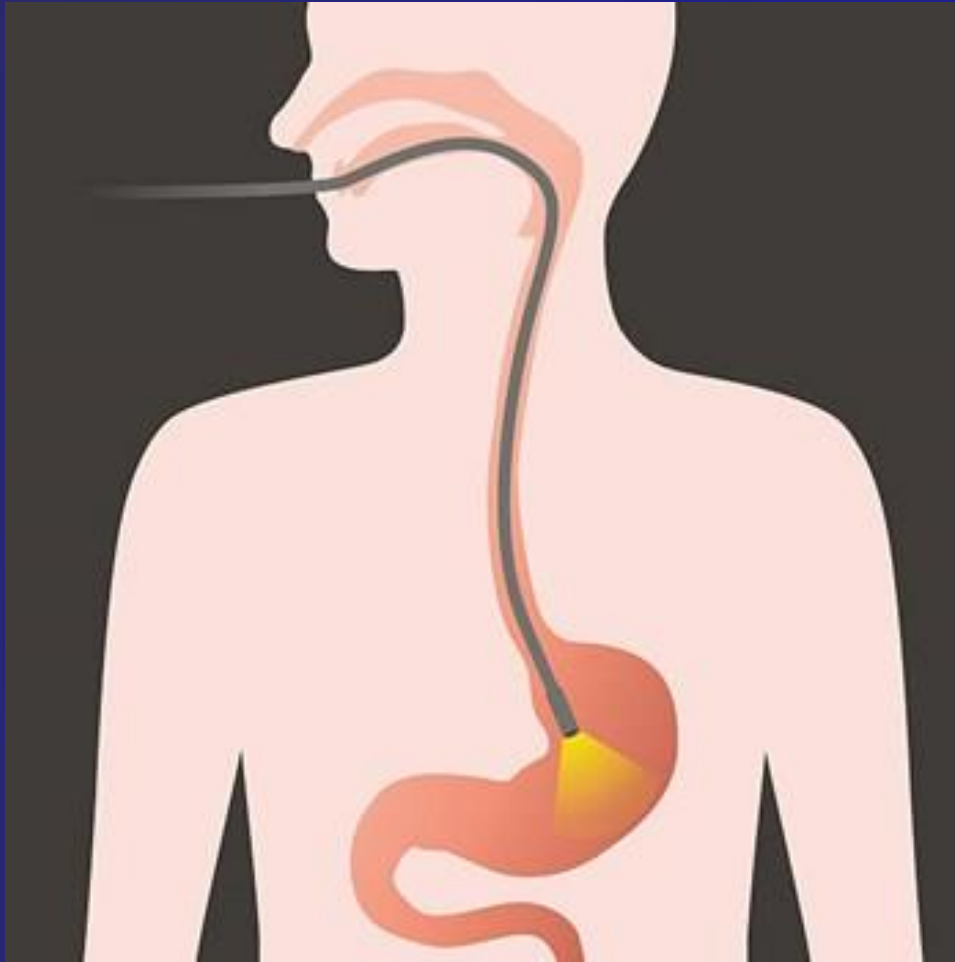


One-arm swordman

Surgery



How can I operate like surgeons?



How?

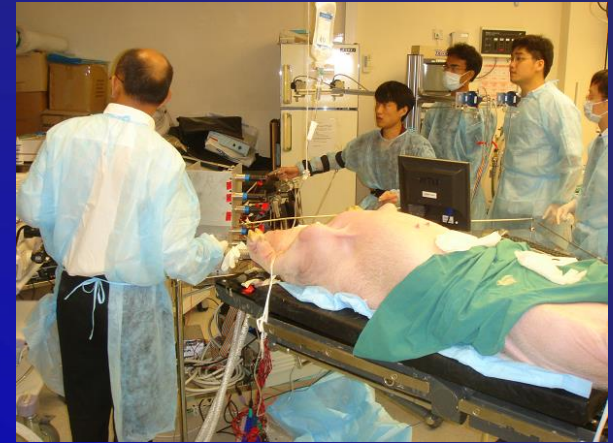
Two arms – robot (2005)

- **Master And Slave Transluminal Endoscopic Robot (MASTER)**

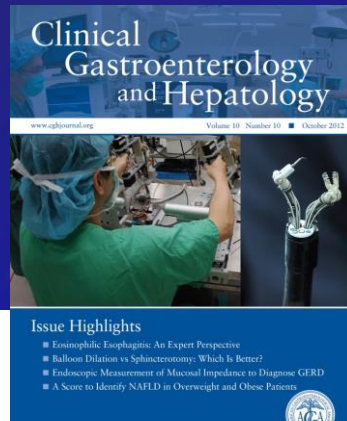


Challenges

Biggest hurdle



- Research funds repeatedly rejected – ? Low scientific value of innovation
- Ran out of money Should we call it quit?
- Decided to press on only option is to do human studies



Editorial

CLINICAL GASTROENTEROLOGY AND HEPATOLOGY 2012;10:1122-1123

Robotic Endoscopy: A Small Case Series, a Giant Step for Endoscopy

Several companies have made initial efforts to develop a new flexible endoscopic platform. Storz (Tuttlingen, Germany) developed the Enubiscope, Olympus (Tokyo, Japan) developed a prototype EndoSamurai, and Boston Scientific (Natick, MA)

Robotic-assisted therapeutic endoscopy may not only be an advance for endoluminal treatments but may also represent the platform for NOTES that our minimally invasive surgery colleagues have been calling for since the beginning of the NOTES era. Either way, this report of the first robotically assisted ESD likely represents the beginning of a new era in therapeutic endoscopy, and we anxiously await reports of further advances.

PRESIDENT'S SCIENCE AND TECHNOLOGY AWARDS 2012

Guest-of-Honour

President Tony Tan Keng Yam


30 October 2012



EndoMaster

SG's Best Funded MedTech Startup in 2017

SINGAPORE'S 10 BEST-FUNDED STARTUPS IN 2017



05

TenX

US\$81 million

FUNDING STAGE
UNDISCLOSED

CATEGORY
FINTECH

Makes cryptocurrencies spendable through a debit card

06

Singapore Life


US\$50 million

FUNDING STAGE
SERIES A

CATEGORY
FINTECH

The "insurtech" firm provides financial services

09



EndoMaster

US\$14.6 million

FUNDING STAGE
SERIES B


CATEGORY
HEALTH

Robotic-assisted surgical system

Singapore medtech firm EndoMaster raises S\$20.5m Series B funding

Thursday, March 16, 2017 - 16:03

JACQUELYN CHEOK



Singapore medical robotics company EndoMaster said on Thursday it has raised S\$20.5 million in Series B funding, said to be one of the largest such amounts for a medical technology (medtech) company here. PHOTO: ENDOMASTER

Robotic-assisted surgical system

Cross-border money transfer services

<https://www.techinasia.com/singapore-10-best-funded-startups-in-2017-so-far>

What is the Learning Point?

**For HealthTech Innovation to Improve Lives:-
Need to rationalize resource allocation**

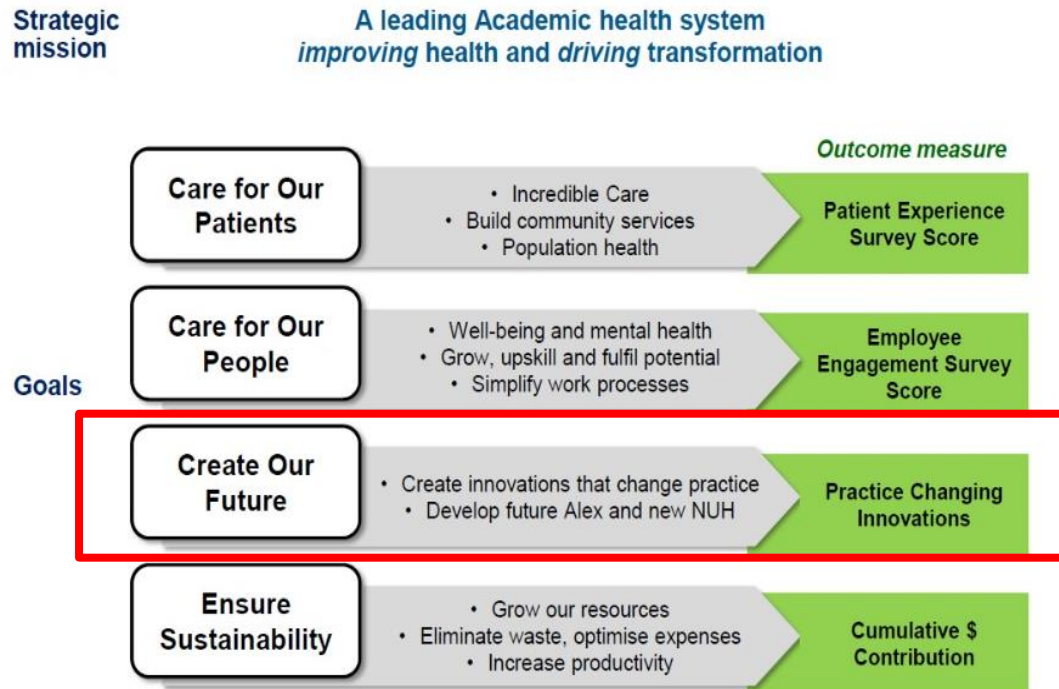
Agenda

- How do endosurgical innovation benefit patients?
- Challenges to adoption of innovations at scale to improve lives
- How do we facilitate adoption of innovations at scale to change practice?

Practice Changing Innovations (“PCI”)

The NUHS Narrative

- NUHS Board has approved workplan **to deliver 5 PCIs** by 2025 – Key is Practice Changing



Support

- **Top-down alignment of end goal! Must benefit people**
- **Appropriate funding**
- **Dedicated team to remove barriers**

Conclusions

- Impact is only possible if we can deploy health innovations at scale
- We need to be aware of challenges to adoption of innovations at scale (to improve save lives)

HARVARD PUBLIC HEALTH
MAGAZINE OF THE HARVARD T.H. CHAN SCHOOL OF PUBLIC HEALTH

“INNOVATION HAS THE POTENTIAL TO TRANSFORM HEALTH SYSTEMS. BUT FOR THIS TO HAPPEN, HEALTH SYSTEMS AND THE POLICIES THAT GUIDE THEM ALSO NEED TO TRANSFORM. PUSHING AN EMERGING TECHNOLOGY INTO A HEALTH SYSTEM THAT WAS DESIGNED DECADES BACK IS NOT GOING TO HELP.”

—RIFAT ATUN, PROFESSOR OF GLOBAL HEALTH SYSTEMS

Thank you very much