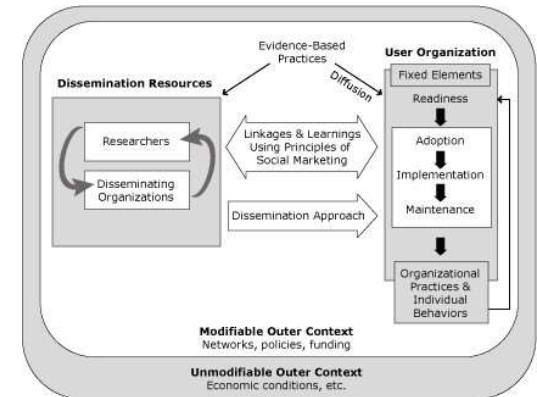


# Introduction to Implementation Science

Prof EK Yeoh  
Director, JC School of Public Health and Primary Care  
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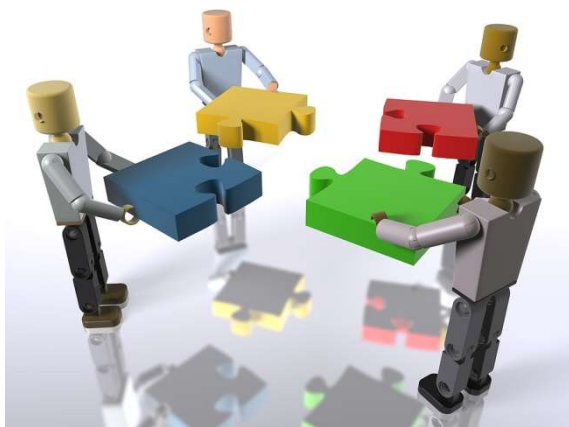
17 January 2020

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“After decades of improving the health care system, patients still receive care that is highly variable, frequently inappropriate, and too often, unsafe”

Braithwaite, 2013



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# The evidence practice gap

- Many patients do not receive (evidence-based) care
  - many tests ordered or medications prescribed are not evidence-based and potentially harmful
- Many patients in hospitals (5-10%) harmed or die because of errors and adverse events, many (40%) are preventable
- Large, unexplained differences in quality and safety between hospitals, hospital wards, practices exist
- Improvement, even after well developed implementation programs, is usually small and slow

Richard Grol, 2013



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## Implementation

Translation & application of innovations, recommended practices or policies. A process of interaction between the setting of goals & actions geared to achieving them

## Dissemination

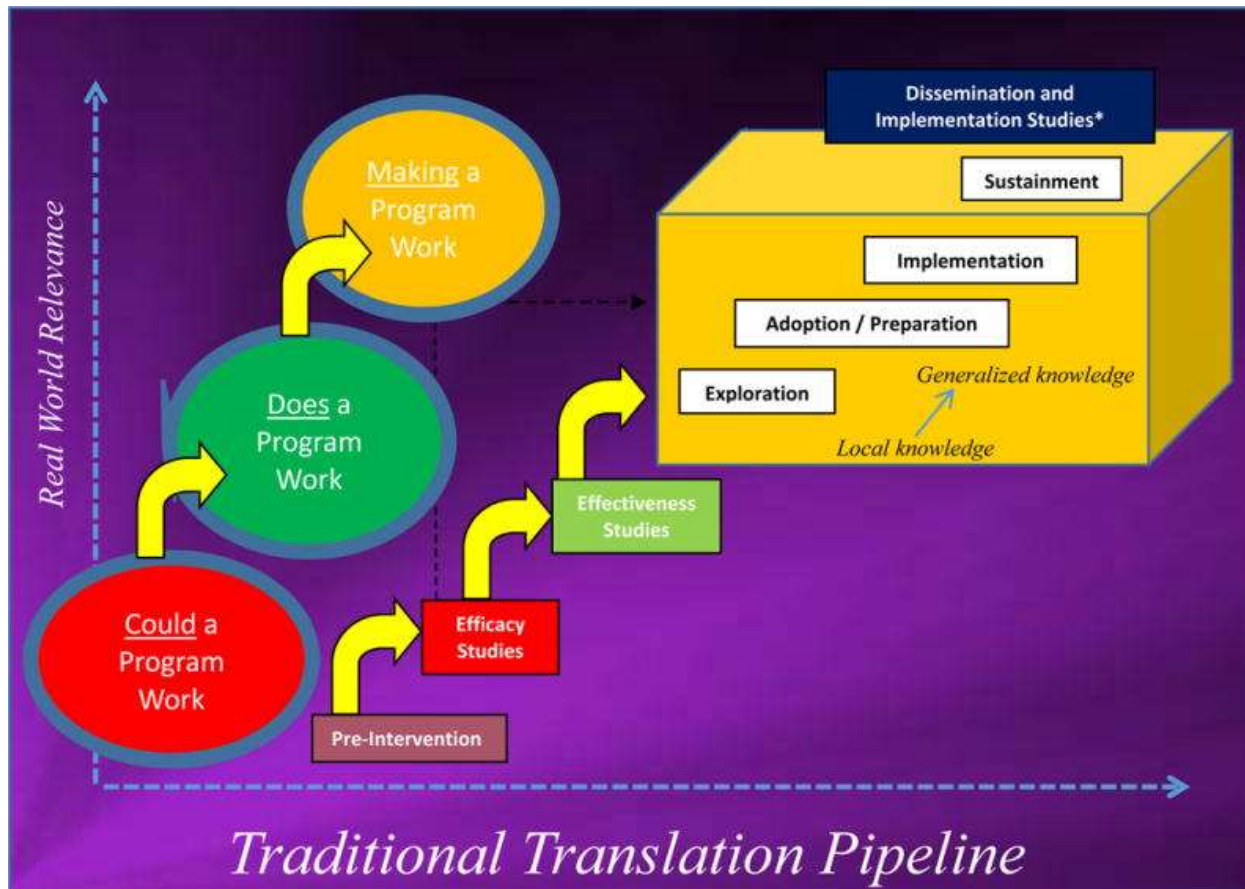
Conscious efforts to spread new knowledge, ideas, policies and practices to specific target audiences or to a public at large



Stickability!



# Traditional translational pipeline



\* These dissemination and implementation stages include systematic monitoring, evaluation, and adaptation as required.

**Traditional translational pipeline from preintervention, efficacy, effectiveness, and dissemination and implementation studies.**



# Definition

Any research producing practically-usable knowledge (evidence, findings, information, etc.) which can improve program **implementation** (e.g., effectiveness, efficiency, quality, access, scale-up, sustainability) regardless of the type of research (design, methodology, approach) falls within the boundaries of operations research.

World Health Organization – Special Programme for Research and Training in Tropical Diseases (WHO-TDR)



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# Implementation Research

***“Implementation research:*** *scientific inquiry into questions concerning implementation – act of carrying an intention into effect, in health research can be policies, programmes, or individual practices (collectively called interventions).”*

Peters DH et al, BMJ (2013)



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# Implementation Research

*Implementation research* seeks to understand what, why, and how interventions work in “real world” settings and to test approaches to improve them.

Peters DH et al, BMJ (2013)



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# Implementation Research

*Implementation research* considers aspects of implementation:

- the factors affecting implementation
- processes of implementation
- results of implementation
- how to introduce potential solutions into a health
- how to promote their large scale use and sustainability

Peters DH et al, BMJ (2013)



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## For researcher

..the scientific study of methods to promote the systematic uptake of research findings and other evidence-based practices into routine practice, and, hence, to improve the quality and effectiveness of health services. It includes the study of influences on health care professionals and organisational behaviour

Eccles Implementation Science 2006



# The evidence- practice gap

Perceived quality problem or  
emergence of new evidence



# Assessment of influencing factors Design of implementation strategies

Evidence-based  
Informed by theory

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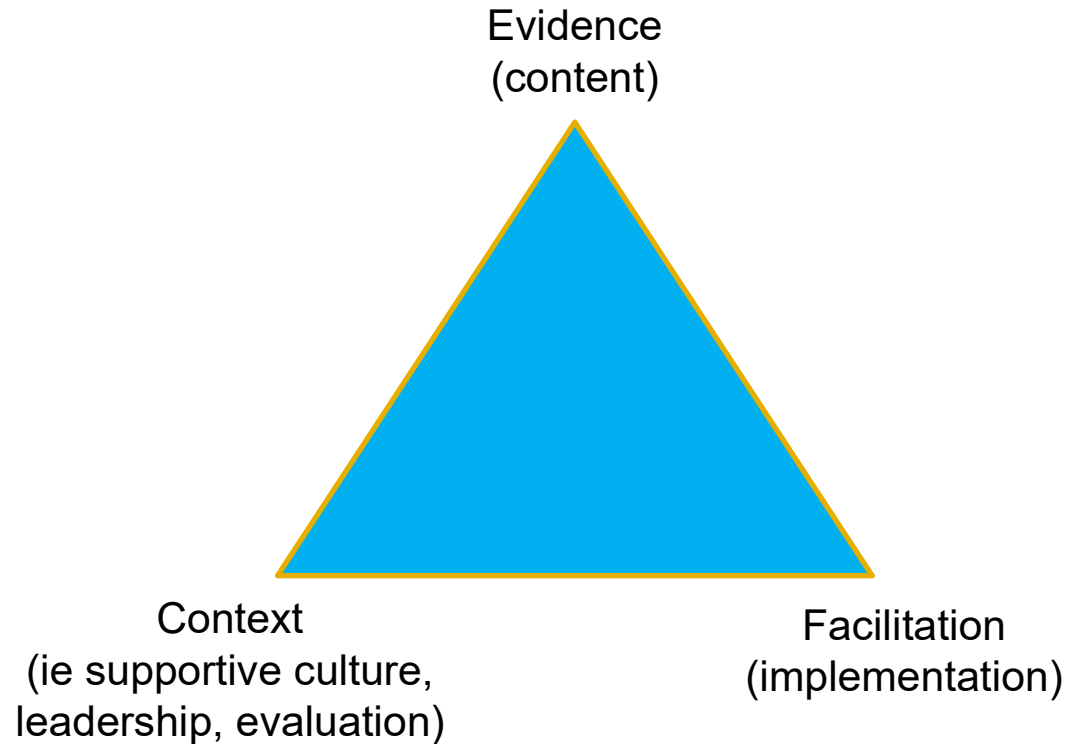
# Sustained improvement of patient care...

..is usually influenced by a complex mix of factors related to:

- Proposal for change
- Patient
- Individual professional
- Social context
- Team and collaboration
- Organisational context
- Wider political and economical context



# Functions of successful implementation of evidence



## Promoting Action on Research implementation in Health Services PARIHS



# Assessment of influencing factors

## Consider:

1. Who needs to do **what**, differently?
2. Using a **theoretical framework**, which barriers and enablers need to be addressed?
3. Which intervention components (**behaviour change techniques**) and modes of delivery could overcome the modifiable barriers and enhance the enablers?
4. How can behaviour change be **measured** and **understood**?

(French et al, Implementation Science, 2012, 7:38)



# System for designing effective implementation interventions

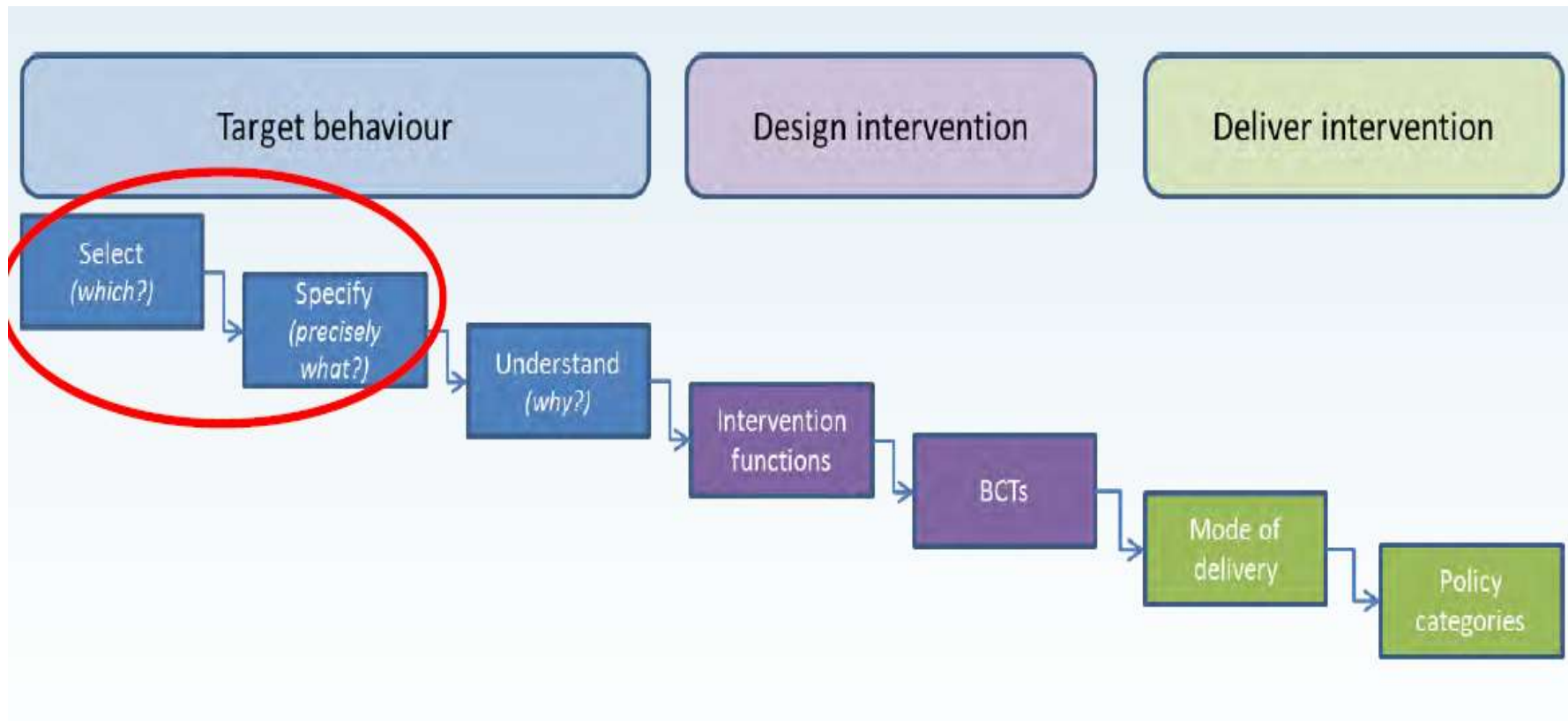
1. Identify the target behaviors which are required for **successful implementation**
2. Understand the target behaviors **in context**
3. Consider full range of possible intervention functions
4. Identify specific **behavioral and policy change techniques**





# Formative Evaluation developing implementation interventions

## Who needs to do what, differently?



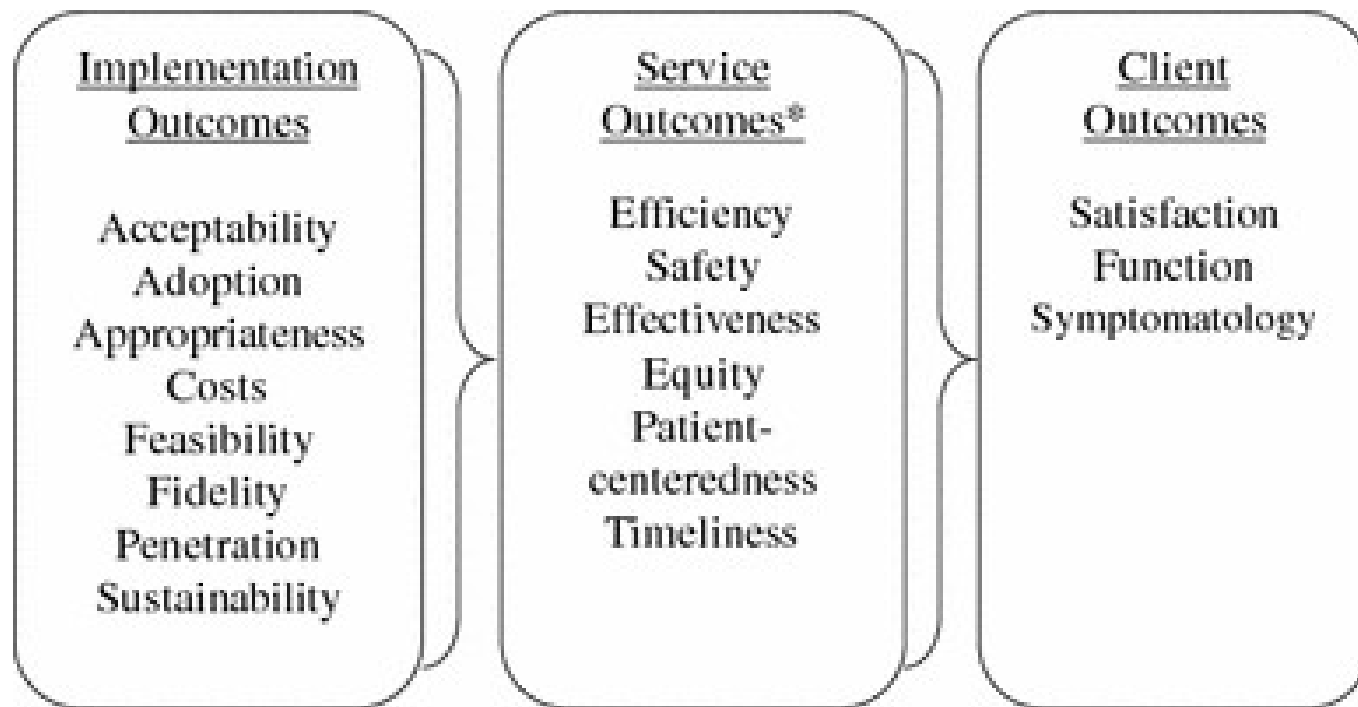
# Implementation outcomes

**Implementation outcomes:** effects of deliberate and purposive actions to implement new treatments, practices, and services

- As indicators of the implementation success
- Proximal indicators of implementation processes
- Key intermediate outcomes



# Types of outcomes in implementation research



\*IOM Standards of Care

Proctor E, Adm Policy Ment Health (2011)



# Optimal care/ Behaviour change

Explicitly evaluating your  
intervention using a theory-  
driven approach

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# Process evaluation

## Goals

1. Monitor and document program implementation and
2. Aid in understanding the relationship between specific program elements and program outcomes.

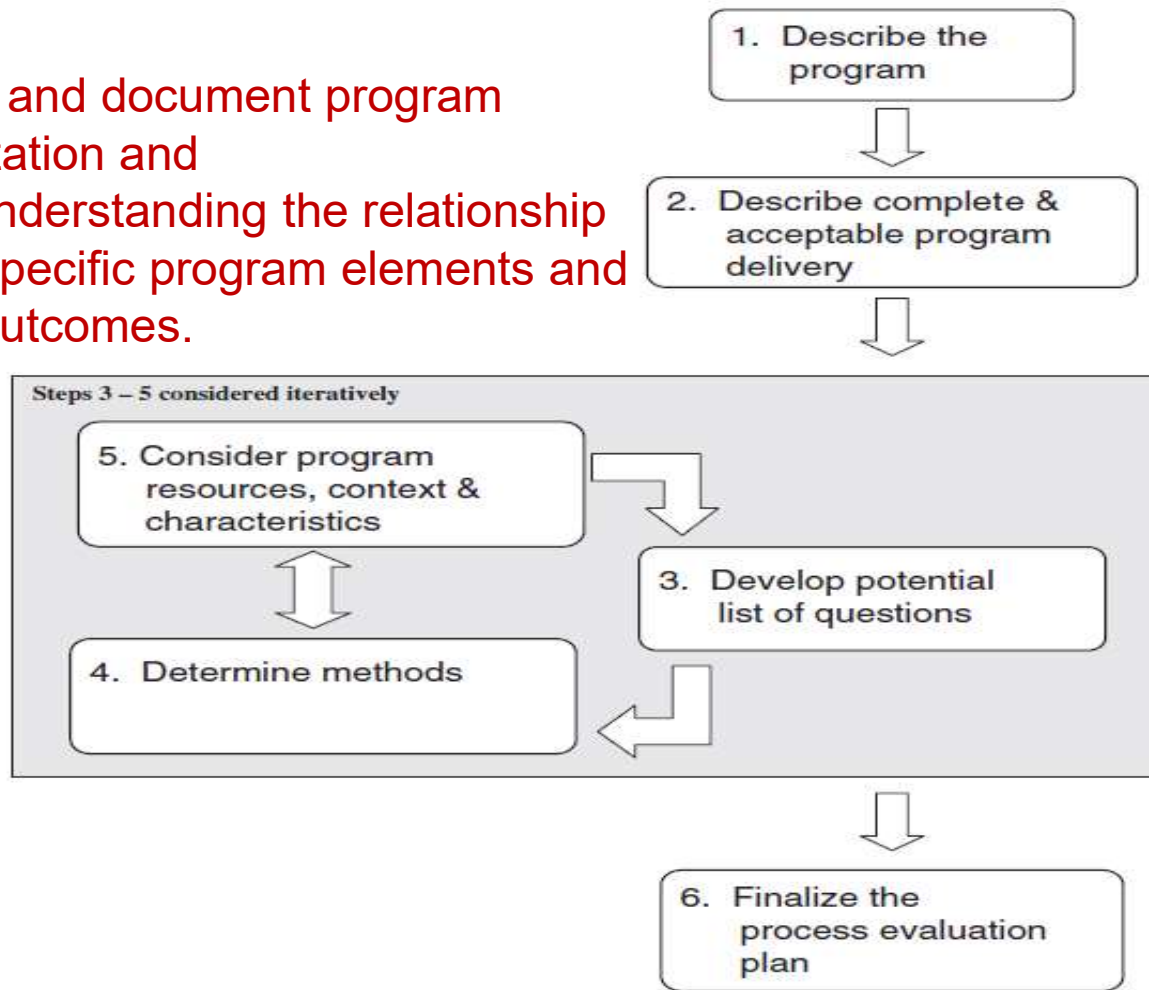


FIGURE 1 Steps in the Process-Evaluation Process

[Health Promot Pract.](#) 2005 Apr;6(2):134-47.





**Example:**

**Quality of healthcare for the ageing –  
Health system and service models to better cater  
for an ageing population**

Funded by the Food and Health Bureau

香港中文大學醫學院

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# Five key service models



**System-wide** Medical/Social service integration

## A&E department

Address needless hospital admissions and refer to appropriate level of care

## Hospital inpatient

Patient assessments and referral to appropriate level of care (post-discharge sub-acute services)

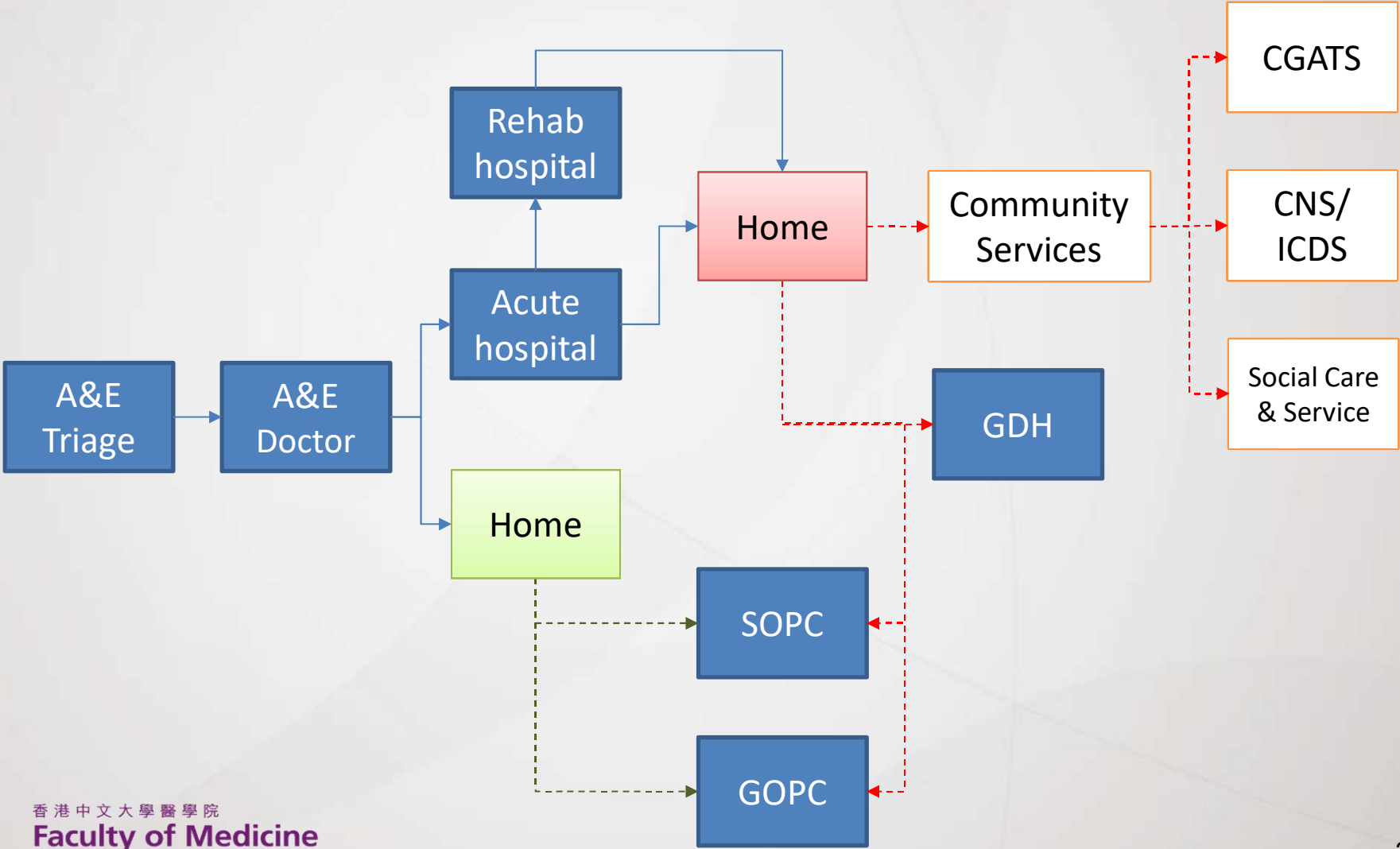
## Community services

Primary Care-led Hub & Network of community services

## End of life care

Frameworks and recommendations for quality care across the spectrum of patient needs and along the patient journey

# Existing model of care







<https://www.scmp.com/news/hong-kong/health-environment/article/2109204/extra-500-beds-hong-kongs-public-hospitals-not>

# Multi-disciplinary Community Referral (MCR) Model – 11 core components



1. Evidence-based practice model
2. Nursing clinical delivery involvement
3. High-risk screening
4. Focused geriatric assessment
5. Initiation of care and disposition planning in the A&E
6. Inter-professional and capacity-building work places
7. Post A&E discharge follow up with patients
8. Establishment of evaluation and monitoring processes
9. Consultant geriatrician-led teams
10. Case management
11. Compliance by the team

## Avert elder people from preventable hospitalization

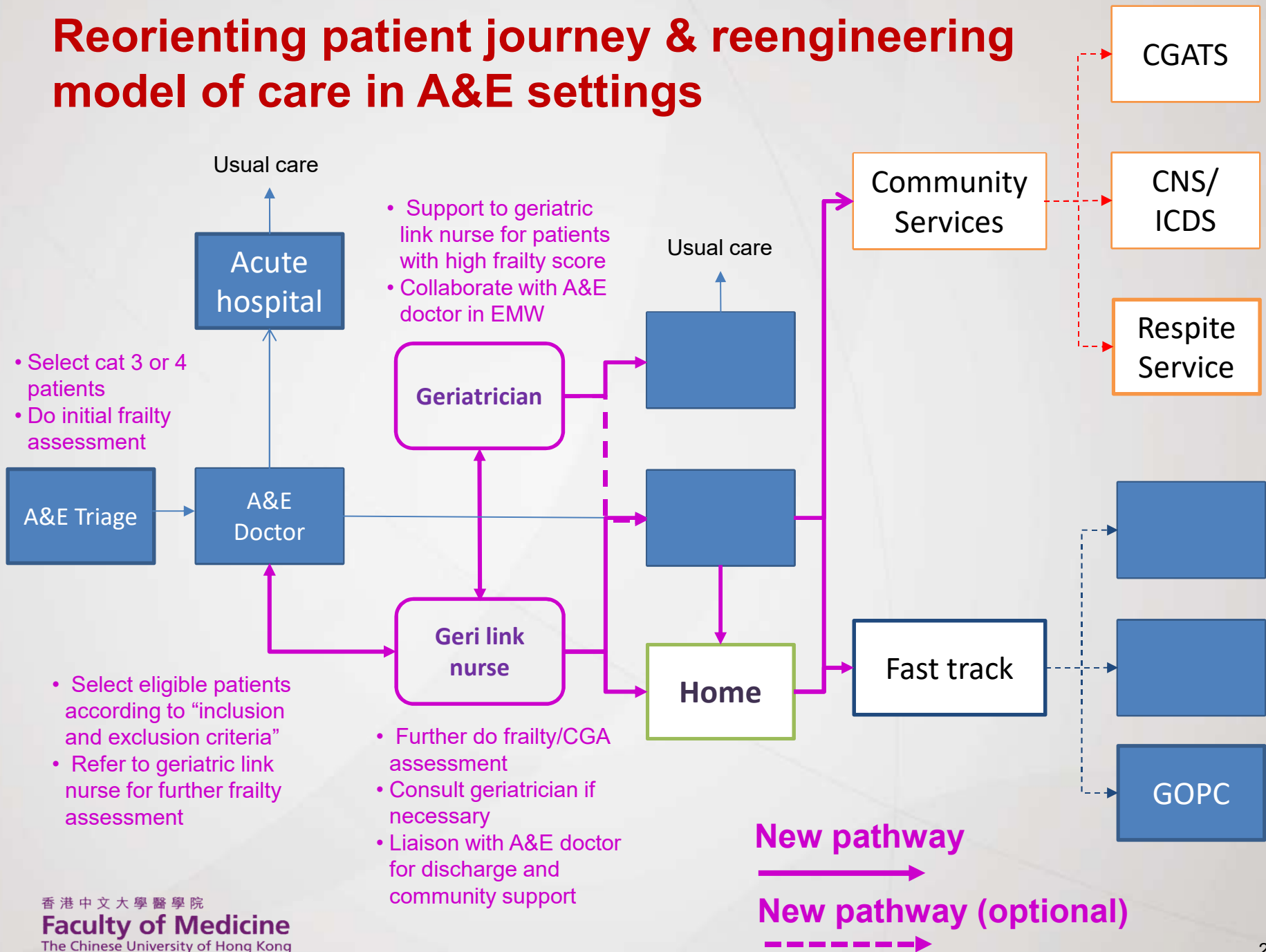
### System perspective

- Serve as a gatekeeper
- Integrate vertically (secondary and primary care) and horizontally (A&E and geriatrics)

### Organizational and patient perspective

- Provide alternative choice (i.e. hospital@home) with similar level of hospital care
- Facilitate “ageing-in-place”

# Reorienting patient journey & reengineering model of care in A&E settings

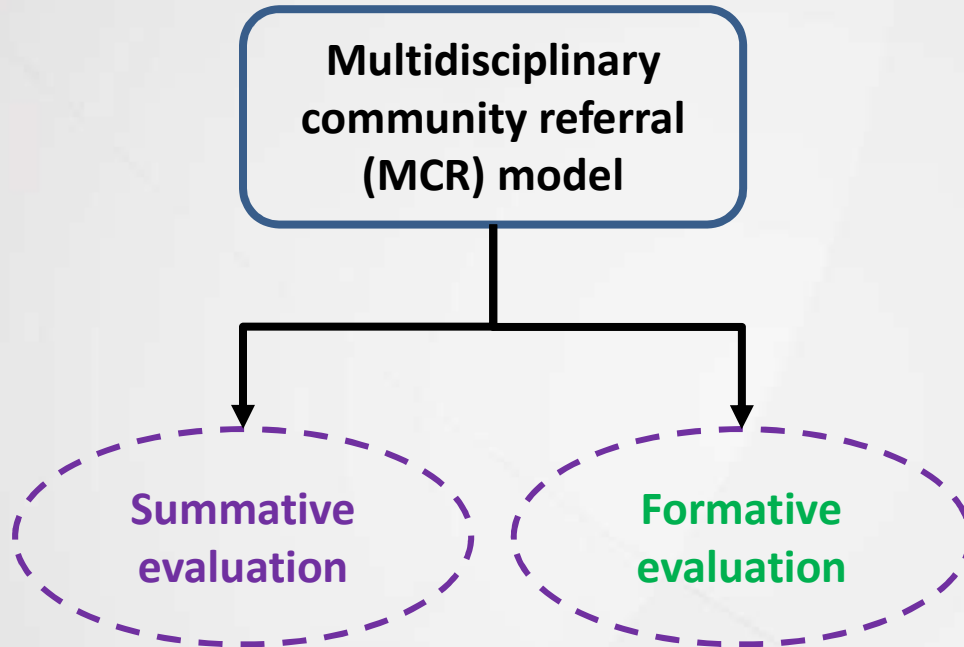


# Aims



- Pilot the service model in different contexts (i.e. different clusters)
- Test the model applicability and impact in different clusters
- Systematic evaluation of possible implementation strategies – facilitation of scaling up effort

# Evaluation



- **Implementation of the proposed multidisciplinary community referral (MCR) model**
- **Summative evaluation:** Assess process, service and client measures
- **Formative evaluation:** Assess barriers and facilitators in the implementation process

# Summative evaluation



- **12 service and client outcome measures**
  1. Number of hospital admission avoided
  2. Hospital admission rate
  3. Length of inpatient stay
  4. A&E re-attendance rate
  5. Hospital re-admission rate
  6. Nursing home admission rate
  7. Patient satisfaction with service
  8. Patient adherence to follow-up appointments
  9. Patients' perceived well-being/quality of life
  10. Home caregiver satisfaction with service
  11. A&E and hospital care providers' satisfaction with service
  12. Primary care and community service providers' satisfaction with service
- **Process measures**
  - Number of participants joined/refusal at different time points
  - Services (e.g. types of community care) provided to the participants

# Formative evaluation



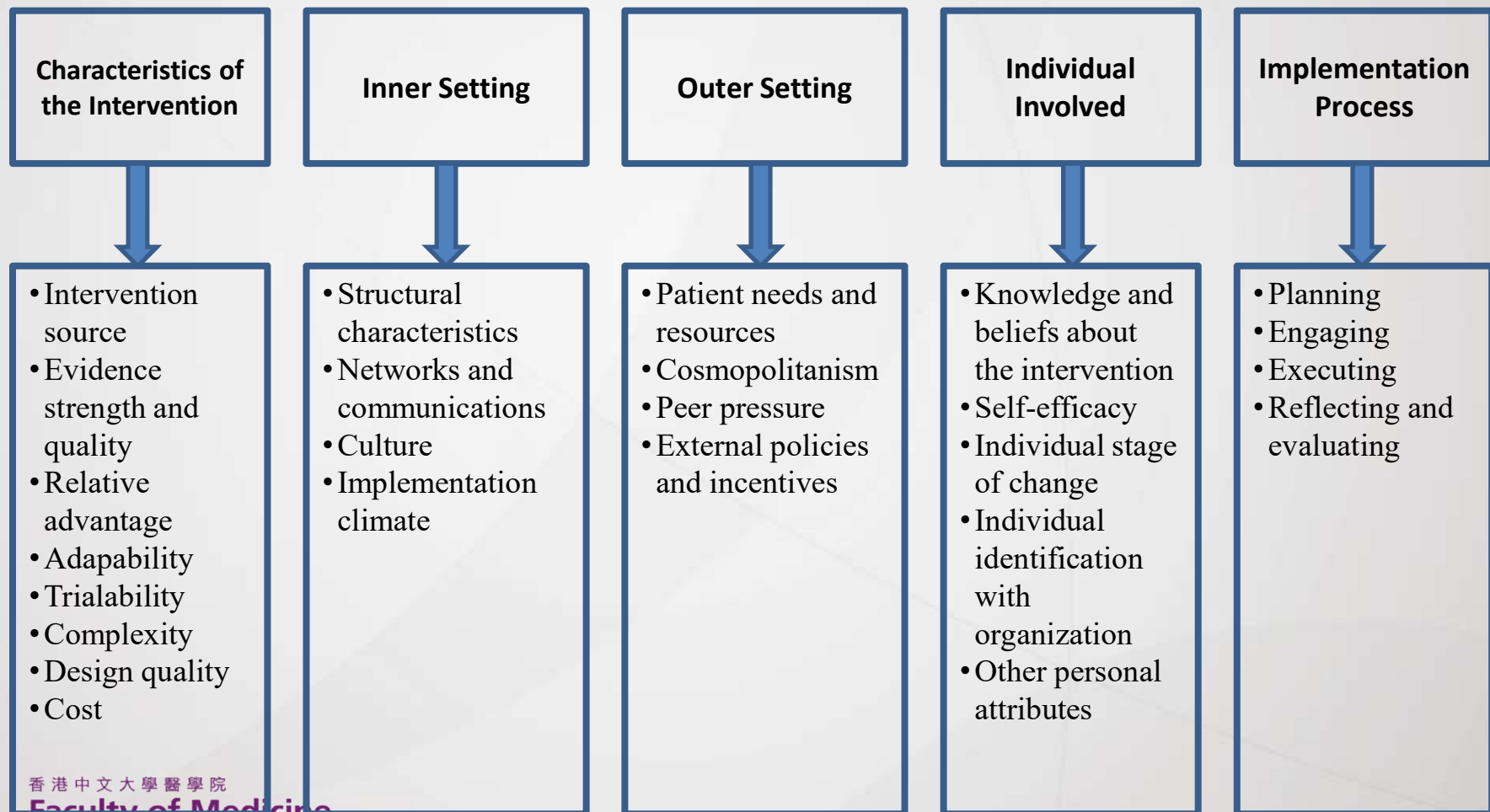
- Adopt **implementation science framework**, Consolidated Framework for Implementation Research (CFIR)
- Assess **barriers and facilitating factors** during the implementation process
- Guiding subsequent **theory based generation of tailored implementation strategies** (e.g. via Behavioral Change Wheel)

# Qualitative inquiry

## Diagnose implementation problems and generate solutions

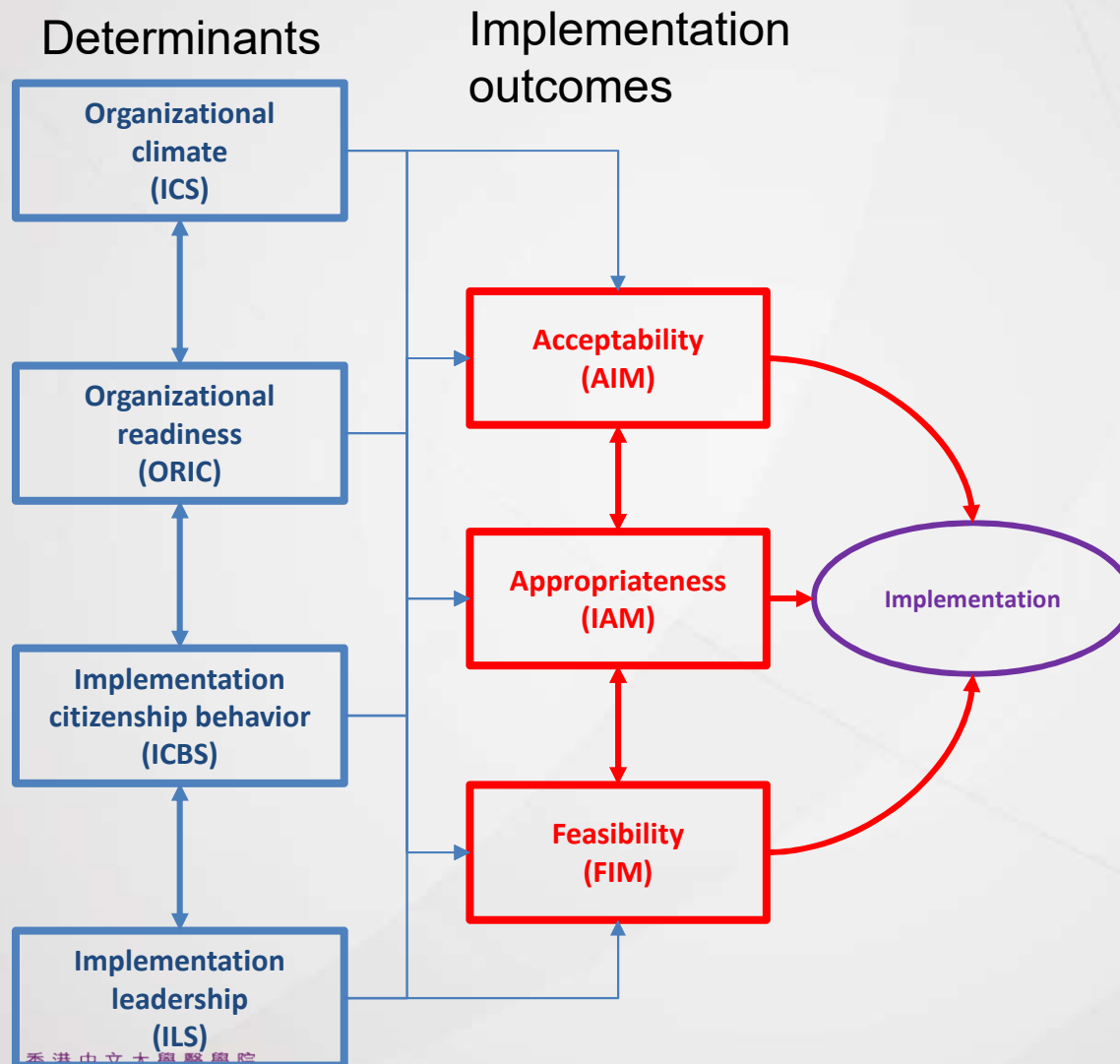


### Consolidated Framework for Implementation Research (CFIR)





# Quantifying the impact of implementation determinants on implementation outcomes



All measures are based on validated scales

### Implementation outcomes

- AIM: Acceptability of Intervention Measure
- IAM: Intervention Appropriateness Measure
- FIM: Feasibility of Intervention Measure

### Determinants of implementation

- ICS: Implementation Climate Scale
- ORIC: Organizational Readiness for Implementing Change Scale
- ICBS: Implementation Citizenship Behavior Scale
- ILS: Implementation Leadership Scale

# Policy implications



- Summative evaluation:
- Comparative performance of different clusters
- Service, client and process outcome measures
  
- Formative evaluation:
- Diagnose facilitators and barriers of implementation across contexts
- Develop tailored implementation strategies
- Mixed methods, theory based approach



**Thank you!**



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