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Implementation Science

Briefing Session for the 2022 Open Call

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Why do we need implementation science?

- 17 years on average from “we know this works” to “routine delivery of it”
- Only ~50% of patients in the US receive recommended/EB care
- 20–25% patients get care that is not needed or potentially harmful

What is Implementation Science?

Definition of Implementation science

- 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 and care.” (Eccles and Mittman, *Implementation Science*, 2006)

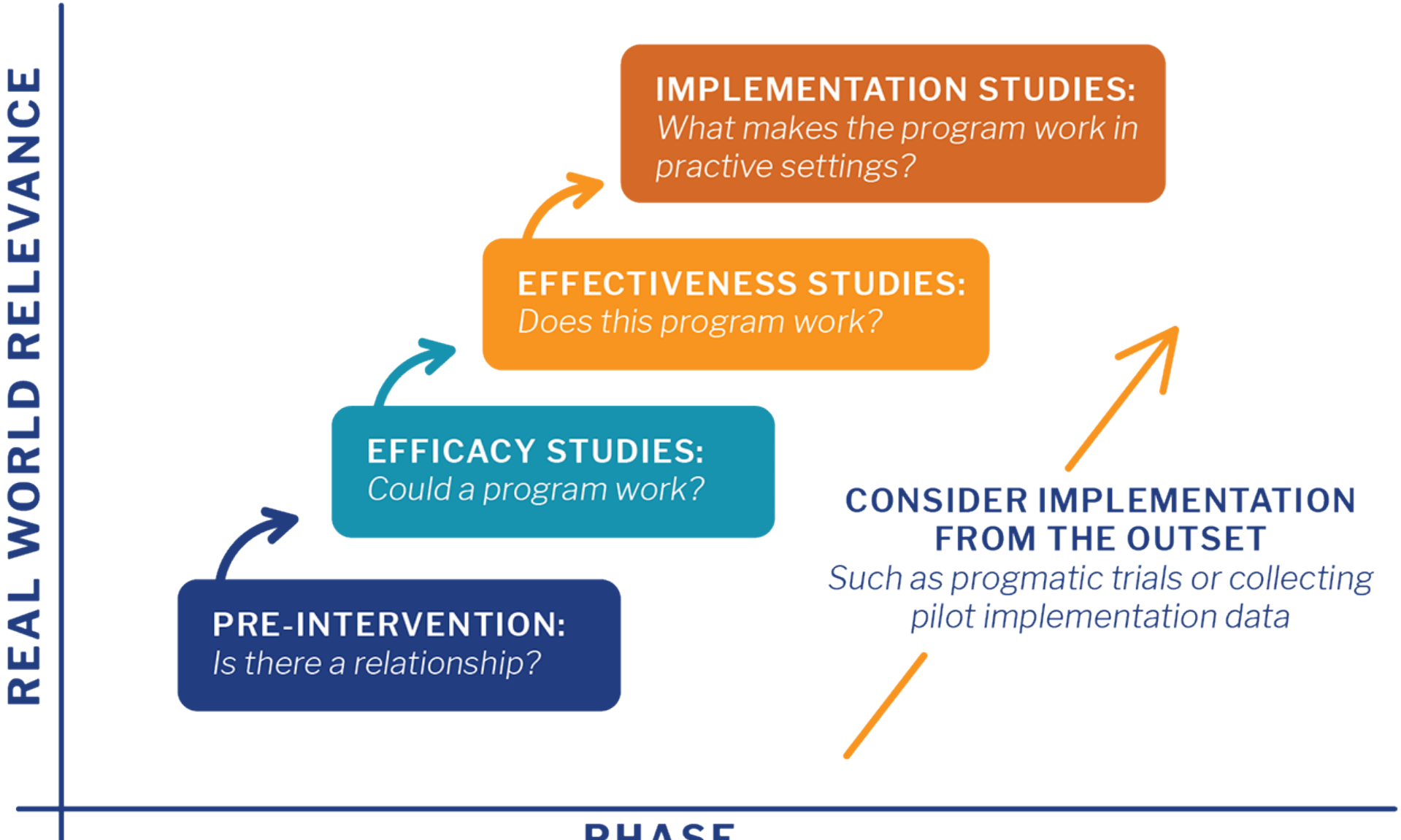
– The study of methods to promote integration of research findings and evidence into healthcare policy and practice. (NIH)

HMRF

- Implementation science aims to promote the systematic uptake of research findings and other evidence-based information into routine practice. It also aims to assess the performance, and, hence, improve the quality and effectiveness of health services. Proposals submitted under this thematic priority should aim to improve the existing healthcare system in terms of enhancing patient care or informing health policies.

1. Strategies to implement and disseminate evidence-based health promotion, prevention, screening, early detection, and diagnostic interventions, as well as effective treatments, clinical procedures or guidelines into existing care systems, particularly with the use of smart technology to facilitate patient care
2. Studies on health care and public health policies and other contextual factors that influence the success of dissemination or implementation efforts
3. To conduct formative and process evaluation for improving implementation outcomes and sustainability
4. Implementation of multiple levels of interventions within community or health services settings to meet the needs of complex patients and diverse systems of care
5. Studies on reducing or stopping (“de-implementing”) the use of clinical and community practices that are ineffective, unproven, low-value, or harmful

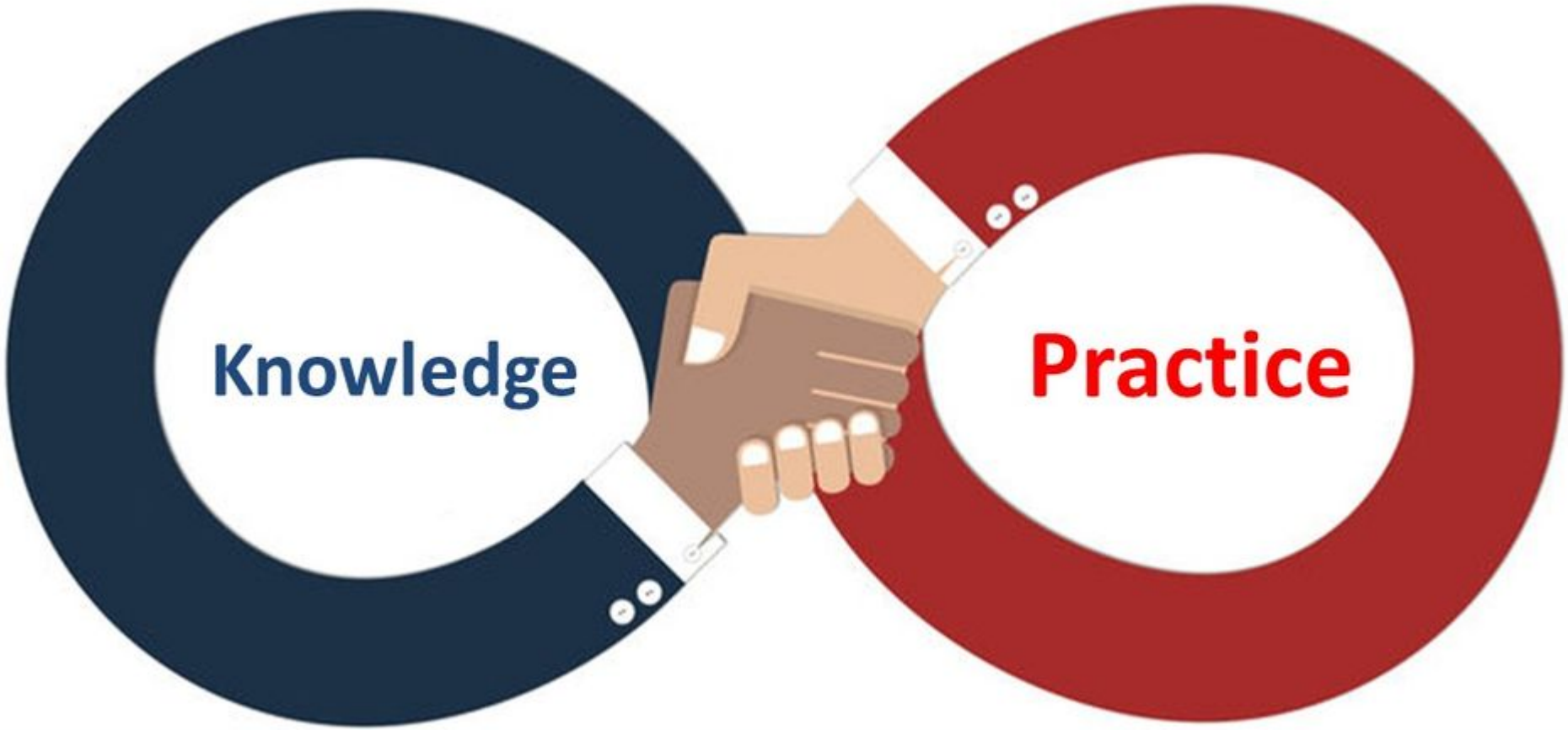
Implementation Science Continuum



Goal of IS in Health Care

- Should not be to determine whether an implementation strategy is effective or not.
- Rather the goal should be “to understand how the strategy works and to ultimately provide guidance in adapting, modifying and customizing it by [providing] an understanding of its mechanisms of action so the strategy can be made to work more effectively.

Implementation Science



How to Write a Successful Implementation Research Proposal?

10 Key Ingredients for IR Proposals

1. The care gap or quality gap
2. The evidence-based treatment to be implemented
3. Implementation model / framework and theoretical justification
4. Stakeholder priorities, engagement in change
5. Setting's readiness to adopt new services/ treatments/programs

Implementation Science 2012 **7**:96 / *Implementation Science*2018 **13**:71

6. Implementation strategy/process
7. Team experience with the setting, intervention, implementation process
8. Feasibility of proposed research design and methods
9. Measurement and analysis section
10. Policy/funding environment; leverage or support for sustaining change

Implementation Science 2012 **7**:96 / *Implementation Science*2018 **13**:71

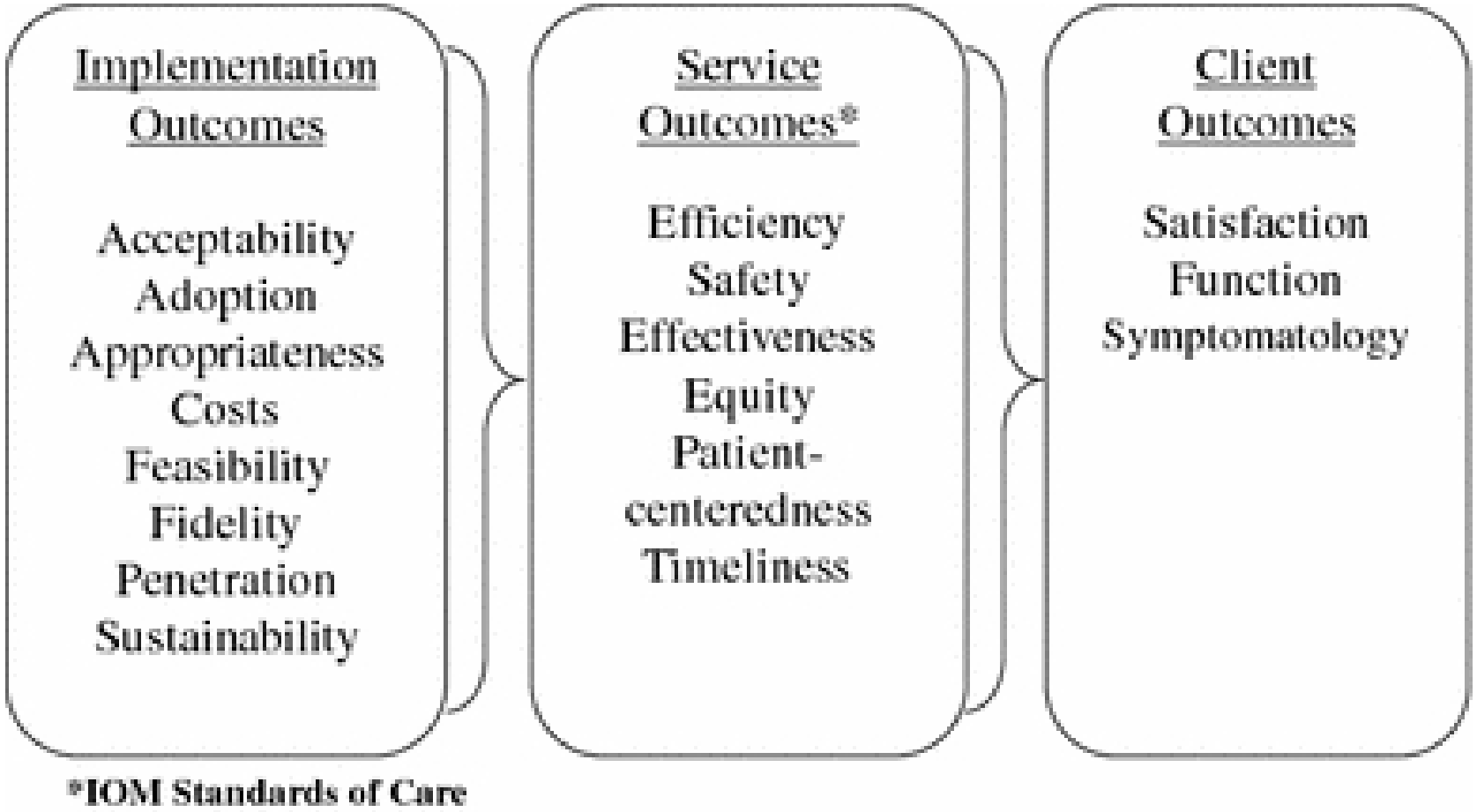
Implementation studies often focus on questions:

- Is implementing a particular practice feasible within a given setting?
- Is the practice acceptable to clinicians, to patients, and to systems?
- What are the costs associated with the innovation?
- Can the practice be sustained over time?
- What are the levels of fidelity or quality that are needed to ensure good outcomes?

IR Frameworks

- CFIR (Consolidated Framework for Implementation Research)
- PRISM (Practical, Robust, Implementation Sustainability Model)
- RE-AIM (Reach Effectiveness Adoption Implementation Maintenance)
- Theoretical Domains Framework (TDF)
- PARHiS (Promoting Action on Research Implementation in Health Services)
- Human-centred design (HCD)

Types of Outcomes in Implementation Reserch



Possible Challenges to Implementation

1. Insufficient information and guidance for reaching clinical decisions
2. Lack of time for providers to effectively implement
3. Providers receive too much information[a] to implement
4. Evidence not accepted as legitimate
5. Implementation gaps not recognized
6. Misaligned financial incentives
7. Insufficient staff or systems support
8. Lack of external pressure and expectations

Implementing a nurse-led ACP intervention in nursing homes: a pragmatic cluster radomized controlled trial

Chia-Chin Lin

Background

The institutionalized elderly in Hong Kong

Growing aging population

- Elderly residents aged ≥ 65 in HK: growing from 1 million to 2.61 million in 2058 (36% of the HK population) [1]
- Much higher than than estimates of the global elderly population: 21.1% in 2050 [2]

Exceptionally high institutionalization rate of individuals ≥ 65

- Hong Kong: 8.5% [3]
- Double that of Japan, and more than 3 times that of Singapore and Taiwan [4]

[1] Policies and measures on elderly care services. Legislative Council (Hong Kong): Council business division 2, 2016: 15–16.
[2] Measuring the Age-friendliness of Cities: A Guide to Use Core Indicators. World Health organization (Japan): who Kobe centre, 2015: 28.
[3] Luk JK, Chiu PK, Chu LW. Factors affecting institutionalization in older Hong Kong Chinese patients after recovery from acute medical illnesses. Arch Gerontol Geriatr 2009;49:e110-4.
[4] The Changing Social Context: Its Implications on Healthcare Services and Policies

17.2%

Annual death rate in nursing homes in Hong Kong [1]

[1] Fang, M.S., Lou, W.V. & Kong, S.T. (2016). The Provision of End-of-Life Care in Residential care homes for the elderly (RCHEs) as a Feasible Option to Living and Dying Well for an Ageing Population (Policy No. 1). Hong Kong: Faculty of Social Sciences & Sau Po Centre on Ageing, University of Hong Kong.

Good end-of-life care is needed for institutionalized residents

Dying in place is rare

- 93% of all deaths in Hong Kong each year occur in hospitals [1]
- Currently deaths in nursing homes are subject to reporting requirements under the Coroners Ordinance, disincentive for residential care homes for the elderly (RCHEs) to allow dying in nursing homes. [2]

Lack of end-of-life care protocol in nueaing homes

- The survey conducted by the Sau Po Centre on Aging in 2015 [3] revealed that 56% of homes (n=100) were not equipped with end-of-life care protocols

[1] Fang, M.S., Lou, W.V. & Kong, S.T. (2016). The Provision of End-of-Life Care in Residential care homes for the elderly (RCHEs) as a Feasible Option to Living and Dying Well for an Ageing Population (Policy No. 1). Hong Kong: Faculty of Social Sciences & Sau Po Centre on Ageing, University of Hong Kong.
[2] Legislative Proposals on Advance Directives and Dying in Place - Consultation Report (July 2020)
[3] The Hong Kong Council of Social Service (2015) Survey on the provision, concerns and improvement priorities of providing End-of-life care in Residential Care Homes for the Elderly (RCHEs). Hong Kong: TheHong Kong Council of Social Service.

Pilot Study-1

Preferences for end-of-life care: a cross-sectional survey of Chinese nursing home residents and family caregivers (PI: Prof. Lin) [1]

- 27 HK nursing homes (2019- Jan 2020)
- 271 residents, including 22 resident-family caregiver dyads

[1] Yan, B., Xu, X., Chau, P. P., Takemura, N., Cheung, D. Y., Chan, F. H., & Lin, C. C. (2020). Preferences for end-of-life care: a study protocol for a cross-sectional survey of Chinese frail elderly home residents in Hong Kong. BMJ open, 10(3), e033862.

Findings of pilot study

1. Lack of end-of-life discussion

- 91% of residents had not heard of advance care planning (ACP) or advance directive (AD)
- 83% had never had any forms of end-of-life discussion (family members or healthcare professionals)
- Commonest reason: not necessary/seemingly early to have end-of-life conversations

2. Nursing home residents value quality of life at the end of life

- In a hypothetical dying scenario (“seriously ill but with no cure available”)
- 56% did not wish to receive CPR
- 59% did not wish to be intubated
- 45% did not wish to receive IV fluid

3. Low patient-proxy agreement in caregiver dyads

- High inconsistency regarding life sustaining treatment preference in the hypothetical dying scenario
- 46% inconsistency rate regarding receiving CPR
- 37% inconsistency rate regarding intubation
- 69% inconsistency rate regarding receiving IV fluid

Pilot Study-2

- The effects of advance care planning intervention on end-of-life care outcomes among nursing home residents: systematic review and meta-analysis of randomized controlled trials
- 10 studies, 3056 participants were included
- Significant effects of ACP interventions on documentation of end-of-life care preferences

Intervention to improve end-of-life discussion in nursing homes

Advance care planning (ACP)

- Process of communication among patients, health care providers, families, and important others regarding the kind of care that will be considered appropriate when the patient cannot make decisions. [1]

Benefits of ACP

- Systematic review: ACP decreased hospitalization rates by 9%–26%; significant increases in the number of residents dying in their nursing home by 29%–40%; decrease in overall health costs. [2]

66% of nursing homes in Hong Kong have not implemented any ACP in the past three years [3]

[1] Sudore RL, Lum HD, You JJ, et al. Defining advance care planning for adults: a consensus definition from a multidisciplinary delphi panel. J Pain Symptom Manage 2017;53(5):821–32.e1
[2] Martin, R. S., Hayes, B., Gregorevic, K., & Lim, W. K. (2016). The effects of advance care planning interventions on nursing home residents: a systematic review. Journal of the American Medical Directors Association, 17(4), 284-293.
[3] The Hong Kong Council of Social Service (2015) Survey on the provision, concerns and improvement priorities of providing End-of-life care in Residential Care Homes for the Elderly (RCHEs). Hong Kong: The Hong Kong Council of Social Service.

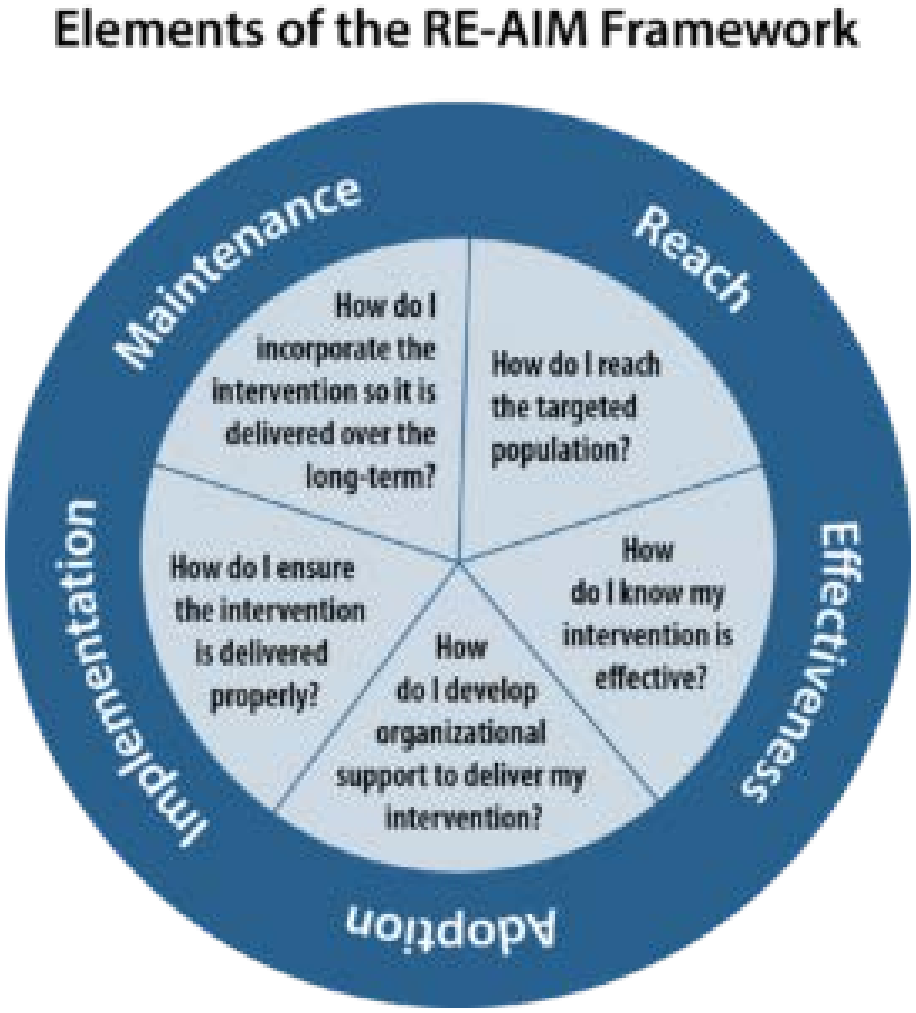
Gap of ACP in nursing home practice

- Evidence has supported the benefits of ACP
- The update of ACP in nursing home practice is low
- A need for improving the implementation of ACP in nursing homes in HK

Implementation science

Close the research-practice gap:

1. Fitting into current workflow
   a. Utilizing existing manpower (i.e. nurses)
   b. Teachable moment with residents and their family: annual individual care planning (ICP) review
2. RE-AIM Framework as the process evaluation tool [1]
   a. Helps translate research into evidence-based practice
   b. Helps plan program to be realistic to adopt in relevant clinical settings



[1] Glasgow, R. E., Vogt, T. M., & Boles, S. M. (1999). Evaluating the public health impact of health promotion interventions: the RE-AIM framework. American journal of public health, 89(9), 1322-1327.

Study aims

1. To implement a nurse-led ACP program for nursing home residents to promote/improve the occurrence of ACP discussions and documentation in Hong Kong
2. To assess the aceptability and feasibility of the ACP intervention
3. To evaluate the effectiveness on new documentation of ACP discussion
4. To identify barriers and facilitators to implementation of the ACP intervention in nursing homes

Methodology

Study design, Participants, Settings

- A mixed methods pragmatic cluster randomized controlled trial
- 20 NHs will be pair-matched based on certain characteristics
- NHs will be randomized to either ACP intervention or usual care
- Eligibility criteria
  - 65 and older
  - Residing in a nursing home in HK for 3 months or longer
  - Chinese speakers
  - With either cognitive or physical impaiments, and/or frailty

- Three-phase implementation program
  - Pre-implementation
  - Implementation
  - Post-implementation

Intervention
Phase 1: pre-implementation

Proposed protocol content

Development of the ACP protocol

A panel of experts in end-of-life care: physicians, nurses, and social workers to develop a comprehensive ACP protocol

- Definition, aims, and purposes of ACP
- Setting and timing of ACP conversation, who should participate, how to prepare for and lead the conversation, questions to ask, how the conversations should progress
- Actions after the conversation, e.g. documentation and regular review.

Phase 2: implementation

(1) Train the trainer program

- A project team will be recruited from each nursing home
- A two-day interactive online training seminar based on the ACP protocol
- The PI is responsible for teaching, supervision, and follow-up of the project teams; the project teams are responsible for continued training and supervision of the other staff in the nursing home.

Phase 2: Implementation

(2) ACP discussion as an integrated part of individual care planning (ICP)

- An ACP discussion between the participating resident, informal caregiver(s) (i.e. family members, significant others, or friends), and the trained nurse will be incorporated in the annual ICP review.
- The discussion will be guided by the protocol and documented in ICP section V (Part V: Other Professionals' Comment)
- According to the Code of Practice for Residential Care Homes (Elderly Persons)[41] issued by the Social Welfare Department, the ICPs should be reviewed at least annually.

Phase 2: Implementation

(3) Implementation of Clinical Process Changes

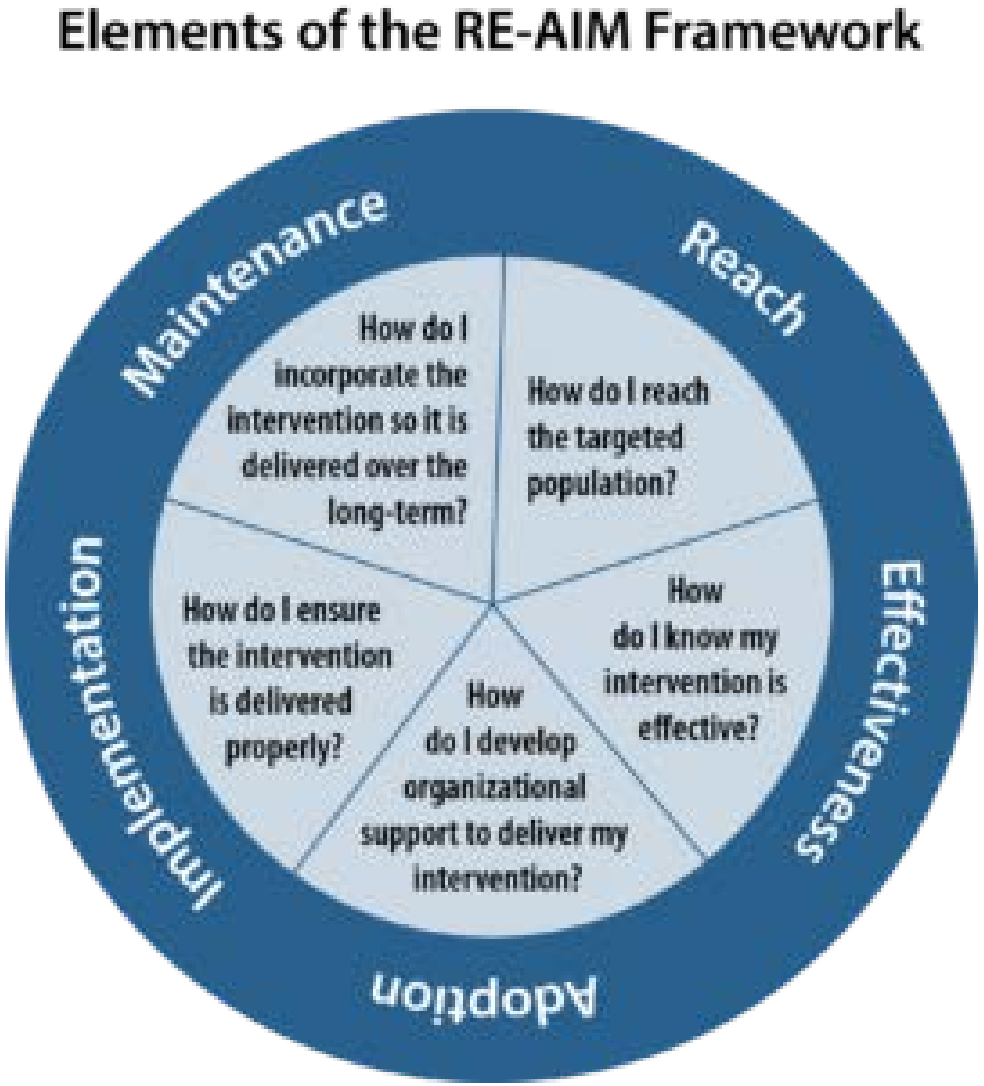
Embedding of ACP discussion forms into patient medical records for documentation of ACP discussions

Phase 3: Post-implementation

Medical record audit: to assess the post-intervention status of ACP documentation.

Focus groups interviews (residents, family members, trained nurses, managers): to assess their experiences with the ACP program, and barriers and facilitators to the implementation of ACP will be explored.

Process evaluation tool and outcome measures



RE-AIM domains	Data collection	Key evaluation questions	Data collection tools
Reach	Absolute number, proportion and representativeness of individuals who are willing to participate	How is target population reached with intervention? How well did intervention reach all those potentially eligible?	Description of recruitment methods Screening and recruitment data
Effectiveness	Impact of intervention on important outcomes and intervention details	Did the programme achieve its intended objectives? What intervention activities took place? Who conducted intervention activities?	Medical record audit (ACP discussion/AD completion) Clinical process changes Descriptive data in study design
Adoption	Absolute number, proportion representativeness of settings and staff who are willing to initiate Adherence and attitudes of staff Participant recruitment, adherence	What were the attitudes and beliefs of staff towards intervention? Was intervention adopted by treating clinical staff? Was intervention adopted by participants? What were the attitudes and beliefs of participants towards intervention?	Qualitative barriers and facilitators feedback in focus groups Medical record audit (ACP discussion documentation) Quantitative outcome measures (ACP conversation documentation, AD completion rates)
Implementation	Staff attitudes and fidelity to various elements of intervention's protocol (consistency of delivery, time and cost of intervention, adaptations made during delivery)	To what extent was intervention implemented as planned? Was the programme relevant (i.e., goal directed and useful)? What were the barriers and enablers to programme delivery? Were there adaptations made during programme delivery? What were the areas of the programme that need improvement? What were the treatment costs? What inputs/resources were allocated for programme implementation? How did external factors influence programme delivery? Was the structure or logic of the programme appropriate?	Audit of ACP discussion forms and medical clinical progress notes Clinical process changes Calculation of direct costs for provision of ACP programme Nursing home ACP programme and staff resources; infrastructure Interview with nursing and allied health staff
Maintenance	Extent to which programme or policy become part of routine organisational practices and policies	Is long-term implementation feasible? Was the data used to change practice? What were the long-term benefits for participants	Interviews with nursing and allied health staff To be evaluated in future longer-term studies

Outcome measures

Primary outcome

- New documentation of ACP discussion

Secondary outcomes

- Healthcare utilization (measured by the number of inpatient hospitalisations, emergency department visits, intensive care unit admissions and length of stay, mechanical intubations rates and in-hospital cardiopulmonary resuscitation rates)
- Designation of a surrogate decision maker
- Patients' involvement for decision making
- Barriers and facilitators to ACP intervention (qualitative interviews)

Conclusions

- Implementation science is a work in progress
- Need good collaborators
  - Multi and inter-disciplinary
- Need good methodologists
  - Methodological challenges

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