ebhc CONFERENCE 2023

THE ECOSYSTEM OF EVIDENCE

Lessons learned in the pandemic era and future challenges

10th International Conference for EBHC Teachers and Developers
10th Conference of the International Society for EBHC
Taormina, 25th - 28th October 2023

#EBHC2023

GIMBE EVIDENCE FOR HEALTH

# Adapting evidence-based peri-discharge complex interventions for reducing 30-day hospital readmissions among heart failure and COPD patients in Hong Kong


Dr. Vincent CH Chung

*Associate Professor*
*Jockey Club School of Public Health and Primary Care,*
*Faculty of Medicine, The Chinese University of Hong Kong*

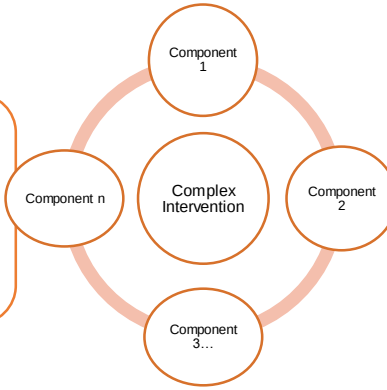
# Background

- Avoidable hospital readmission is a key policy problem among healthcare systems globally[1].
- Heart failure (HF) and chronic obstructive pulmonary disease (COPD) are the two leading causes of hospital readmission[2].

# Complex interventions for reducing 30-day avoidable hospital readmission

**Definition**

- Complex interventions are defined as interventions comprising of multiple interactive components[3].




**Key Goal**

- To ensure a seamless transition from inpatient to outpatient care[4]

**In Practice**

- The complexity and components of complex interventions vary across healthcare system contexts, tailored to different needs of different patients.

# Background

- Effectiveness of peri-discharge complex interventions for reducing avoidable readmissions among patients with heart failure or COPD has been synthesized[5-6].


Perspectives in Public Health

RSPH

Impact Factor: 5.8 / 5-Year Impact Factor: 6.3 JOURNAL HOMEPAGE

Restricted access Review article First published online March 15, 2021

Peri-discharge complex interventions for reducing 30-day hospital readmissions among heart failure patients: overview of systematic reviews and network meta-analysis

CCW Zhong, CHL Wong, et al. and VCH Chung View all authors and affiliations

Volume 142, Issue 5 https://doi.org/10.1177/17579139209852


International Journal of Integrated Care

Int J Integr Care. 2022 Jan-Mar; 22(1): 7. PMCID: PMC8815439
Published online 3 February 2022. doi: 10.5334/ijic.6018 PMID: 35136388

Effectiveness of Peri-Discharge Complex Interventions for Reducing 30-Day Readmissions among COPD Patients: Overview of Systematic Reviews and Network Meta-Analysis

Claire C. W. Zhong, MPhil,[1] Charlene H. L. Wong, PhD,[1] William K. W. Cheung, MSc,[1] Eng-kiong Yeoh, FFPH,[1] Chi Tim Hung, FHKAM,[1] Benjamin H. K. Yip, PhD,[1] Eliza L. Y. Wong, PhD,[1] Samuel Y. S. Wong, MD,[1] and Vincent C. H. Chung, PhD[1,2]

- Benefits of peri-discharge complex interventions may vary across contexts

→ Evidence-based peri-discharge complex interventions should be adapted before implementation.

# Aim

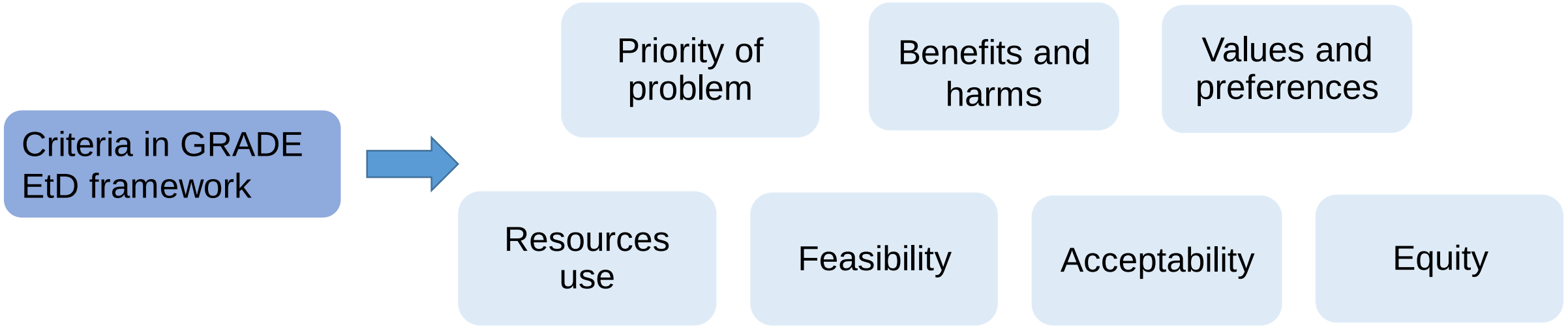
- To adapt evidence-based complex interventions supported by results from previously published network meta-analyses[5-6]

- Tailoring them to fit the context of Hong Kong public healthcare system, from local stakeholders' perspectives.

# GRADE Evidence to Decision Framework

- To translate evidence-based complex interventions into locally adaptable intervention options - GRADE Evidence to Decision (EtD) framework[7] was used a guide.

- The transparent nature of the GRADE EtD framework can help stakeholders adapting complex interventions into a new healthcare system context in a structured and comprehensive manner.



# Methods

# Preparation of evidence profiles

- Comparative effectiveness results of different peri-discharge complex interventions generated from network meta-analysis are displayed in evidence profiles

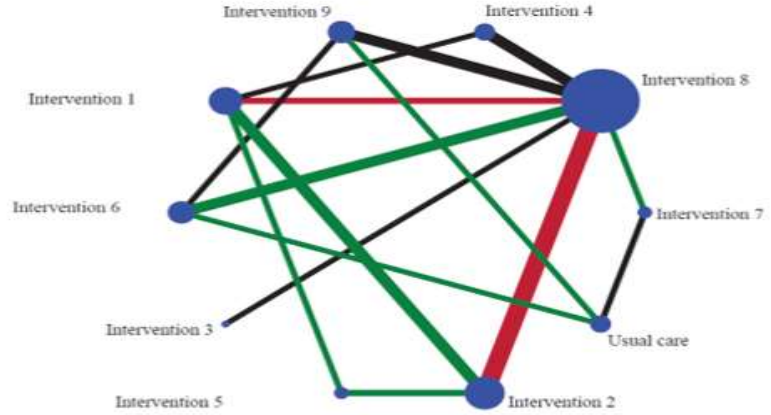
An example of Evidence Profile

***Problem:*** Heart failure patients

***Interventions:*** Intervention 1, Intervention 2, Intervention 3, Intervention 4, Intervention 5, Intervention 6, Intervention 7, Intervention 8, Intervention 9

***Comparison(reference):*** Usual care

***Outcome:*** 30-day all-cause readmission




Notes: Peri-discharge complex interventions and usual care are described in Table 1 and 2. Nodes represent the interventions, node sizes correspond to the number of studies involved, lines connecting nodes represent direct comparisons between pairs of interventions. Width of the lines represents the proportion of the number of trials for each comparison as compared to total number of trials. Line color indicates different overall risk of bias level, with red referring to high risk of bias, green referring to low risk of bias and black referring to some concerns.

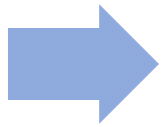
| ***Complex Interventions (studies/ participants)*** | Effectiveness Ranking* | Quality of evidence** | Interpretation of findings*** | Anticipated absolute effects (No. of readmission) | | |
|---|---|---|---|---|---|---|
| ***Total:19 RCTs, 5155 participants*** | | | | Without intervention (Only provides usual care) | With complex intervention | Difference in No. of readmission and 95%CI |
| Intervention 2 (5 RCTs, 596 participants) | 1 | ⊕⊕⊕◯ Moderate | Probably superior to usual care | 215 per 1,000 | 101 per 1,000 | 114 fewer per 1,000 (49 fewer to 179 fewer) |
| Intervention 4 (3 RCTs, 348 participants) | 2 | ⊕⊕⊕◯ Moderate | Probably superior to usual care | 215 per 1,000 | 198 per 1,000 | 16 fewer per 1,000 (90 fewer to 57 more) |
| Intervention 5 (1 RCTs, 255 participants) | 3 | ⊕⊕⊕◯ Moderate | Probably superior to usual care | 215 per 1,000 | 118 per 1,000 | 97 fewer per 1,000 (25 fewer to 169 fewer) |

# Methods

- Two 18-participant panels were recruited to carry out a two-step process for both conditions

➢ Based on the evidence profiles, they use their personal local practice experience and expertise to contribute to:

Step 1: Prioritizing evidence-based peri-discharge complex interventions



Step 2: Formulating recommendations on the prioritized complex interventions based on a two-round Delphi survey

# Step 1: Prioritizing complex interventions

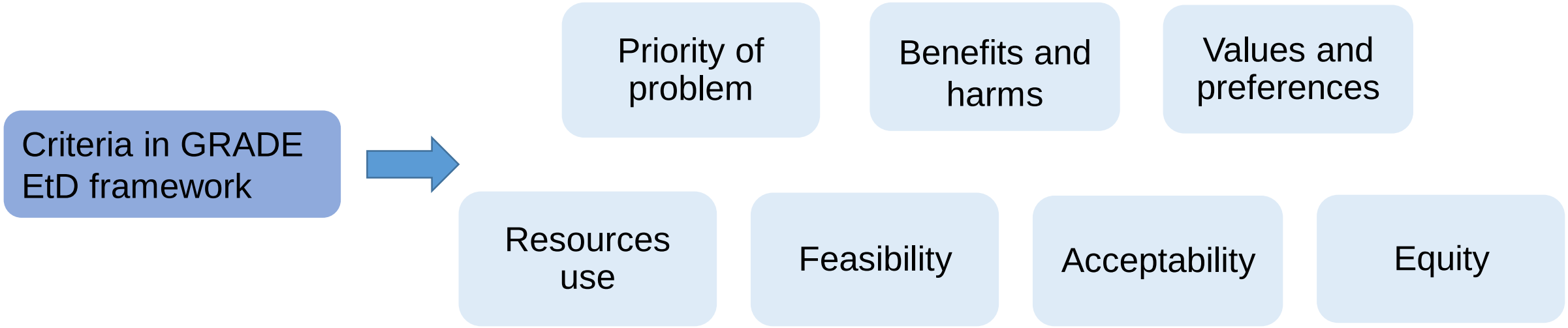
In this step, stakeholders in the panel were asked to provide their judgements on the following six criteria[8] for prioritizing evidence-based peri-discharge complex interventions.

➢Differing from the criteria in GRADE Evidence to Decision framework for making recommendations, these criteria place emphasis on local contextual and organizational factors for prioritization.

| | | |
|---|---|---|
| Local burden of readmission | Appropriateness of current practice patterns | Ongoing controversy |
| Perceived health impact | Availability of well-developed local guidelines | Methodological quality of current evidence |

# Step 2: Formulating recommendations on the prioritized complex interventions based on a two-round Delphi survey

- Each prioritized complex interventions were presented in a GRADE evidence to decision (EtD) framework format.



# Step 2: Formulating recommendations on the prioritized complex interventions based on a two-round Delphi survey

- For each prioritized complex interventions, stakeholders were invited to determine the recommendation level after comprehensively considering the criteria in EtD framework[7-8].

Intervention B01) Should **Supportive-educative intervention**, including components of Patient Education (PE), Medication Intervention (MI), and Self-Management (SM), be implemented for reducing 30-day hospital readmissions among heart failure patients?

| Type of recommendation | **B01Q13. To what extent will you recommend/ suggest this intervention option?** | Recommend against this option | Suggest not this option | Suggest this option | Recommend this option |
|---|---|---|---|---|---|
| | | ○ | ○ | ○ | ○ |

# Data analysis

Delphi Round 1 Questionnaire

Recommendation level for each complex intervention:

- Median rating
- Interquartile range (IQR)
- Percentage agreement (%)
- Qualitative comments from stakeholders

Cut-off level: 70%[9-10]

Positive Consensus:

≥ 70% of stakeholders rated “suggest this option” or “recommend this option”

Endorsed by local stakeholders as recommendation

Negative Consensus:

≥ 70% of stakeholders rated “suggest not this option” or “recommend against this option”

Delphi Round 2 Questionnaire

Interventions with neither positive nor negative consensus reached

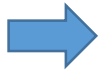
# Results

## Lists of endorsed peri-discharge complex interventions for both conditions

| For Heart Failure | Percentage agreement |
|---|---|
| **Intervention 1**, including components of *medication intervention*, *and patient education* | 77.8% |
| **Intervention 2**, including components of *medication intervention, patient education, and self-management* | 83.3% |
| **Intervention 3**, including components of *medication intervention, patient education, self-management, telephone follow-up, community service, and follow-up scheduled* | 72.2% |
| **Intervention 4**, including components of *medication intervention, patient education, self-management, telephone follow-up, case management, and discharge planning* | 83.3% |
| **Intervention 5**, including components of *telephone follow-up and patient hotline* | 72.2% |

| For COPD | Percentage agreement |
|---|---|
| **Intervention 1**, including components of *patient education, patient centered discharge instructions, telephone follow-up, and case management* | 70.6% |
| **Intervention 2**, including components of *patient education, patient centered discharge instructions, telephone follow-up, and self-management* | 76.5% |
| **Intervention 4**, including components of *provider continuity, rehabilitation intervention, discharge planning, and self management* | 94.1% |
| **Intervention 7**, including components of *patient education and rehabilitation intervention* | 70.6% |
| **Intervention 9**, including components of *provider continuity, rehabilitation intervention, discharge planning, self management and patient education* | 70.6% |
| **Intervention 10**, including components of *patient education, patient centered discharge instructions, telephone follow-up, case management, provider continuity, rehabilitation intervention, discharge planning and self management* | 82.4% |

Five common components for the two conditions



**Case Management, Discharge planning, Patient Education, Self-Management, Telephone Follow-Up**

# Summary

- By applying the GRADE EtD framework, a list of local stakeholders-endorsed evidence-based complex interventions for reducing 30-day hospital readmission is established for HF and COPD, respectively.

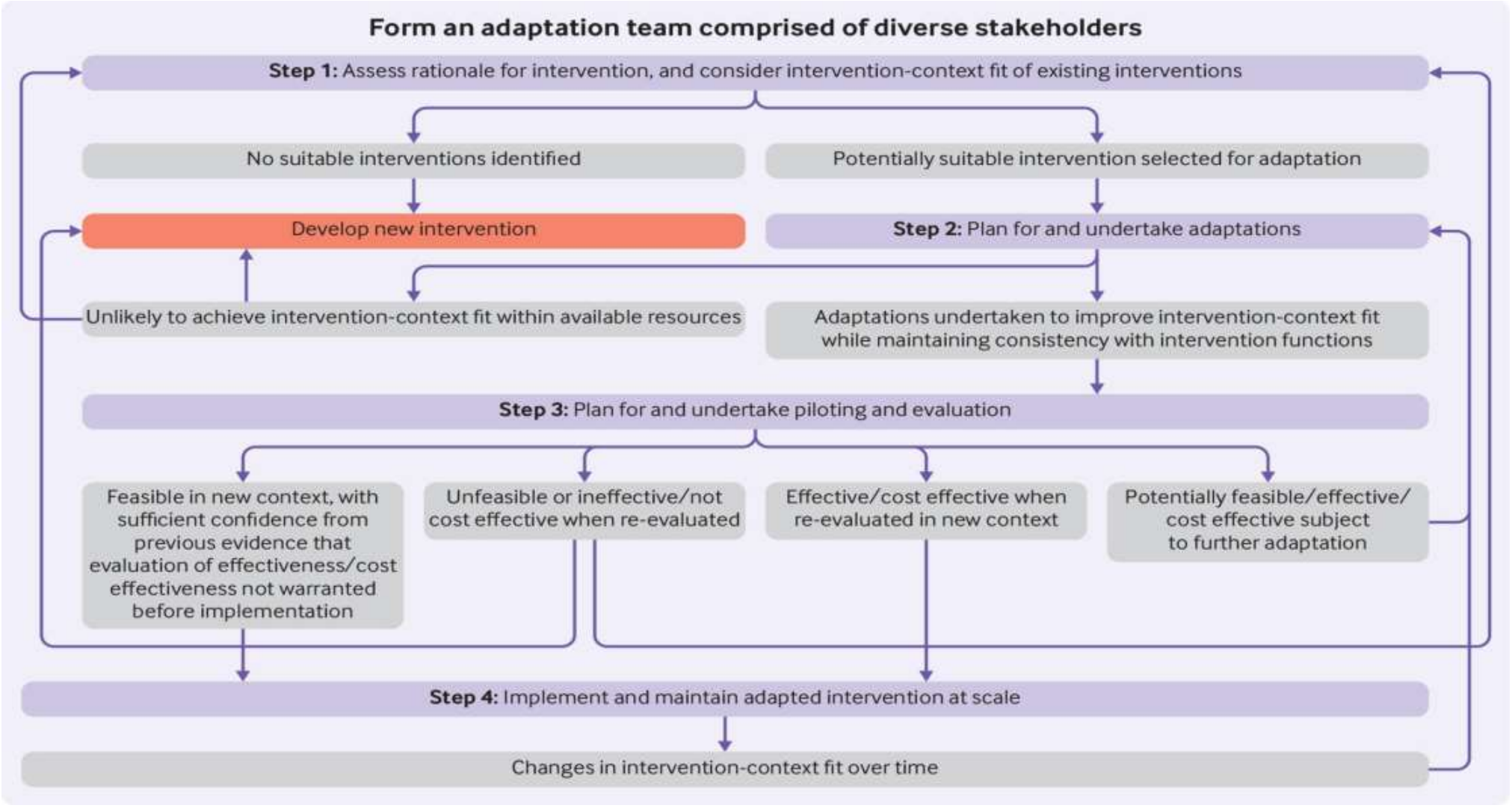
- Among these adapted Interventions, five common components for both HF and COPD are considered to be core elements for reducing 30-day hospital readmission in the Hong Kong public healthcare system.

**Case Management, Discharge planning, Patient Education,**

**Self-Management, Telephone Follow-Up – *priority for implementation***

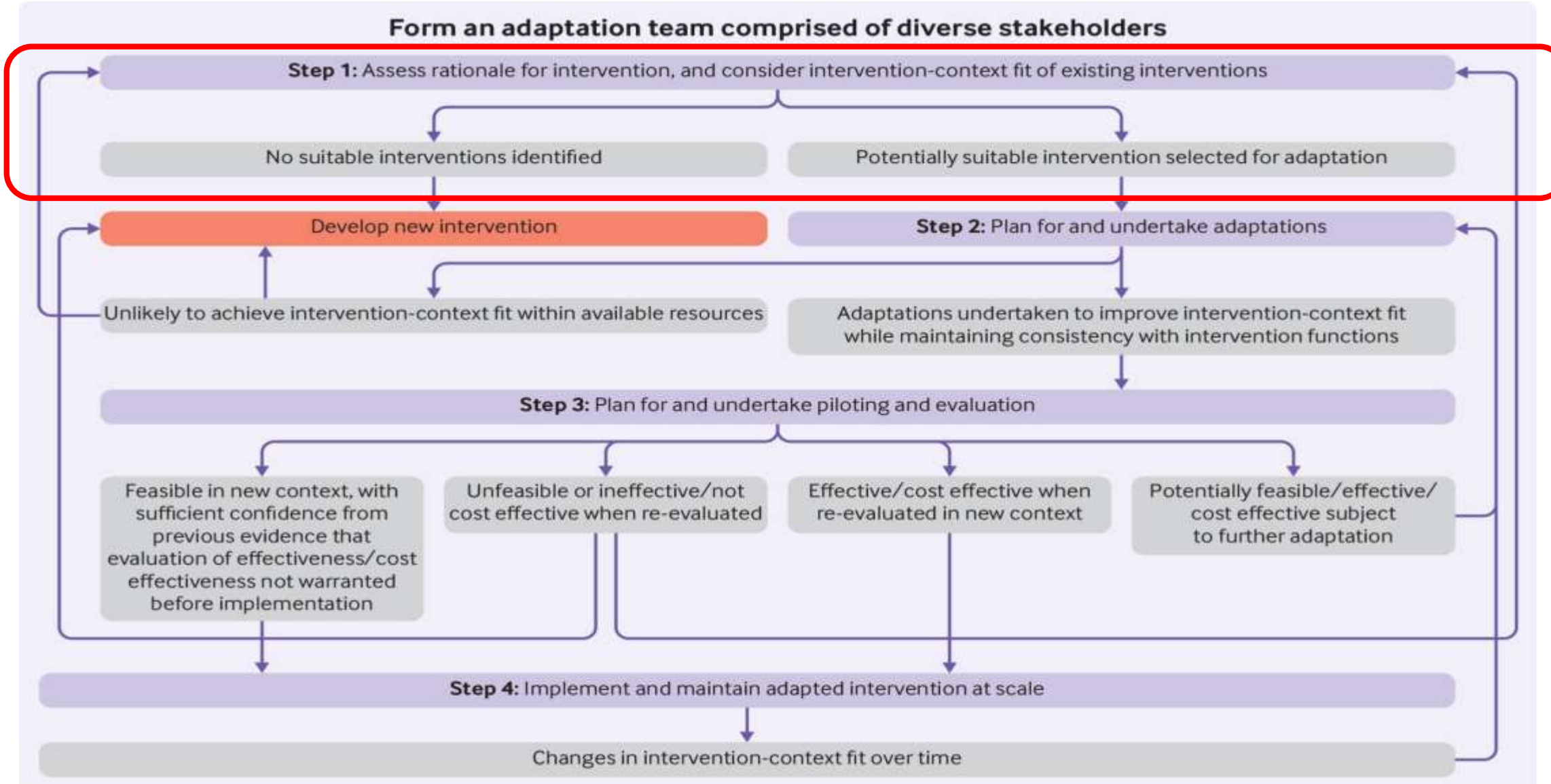
# Implications

- ADAPT guidance - process model for guiding refinement of complex interventions into new contexts[11]



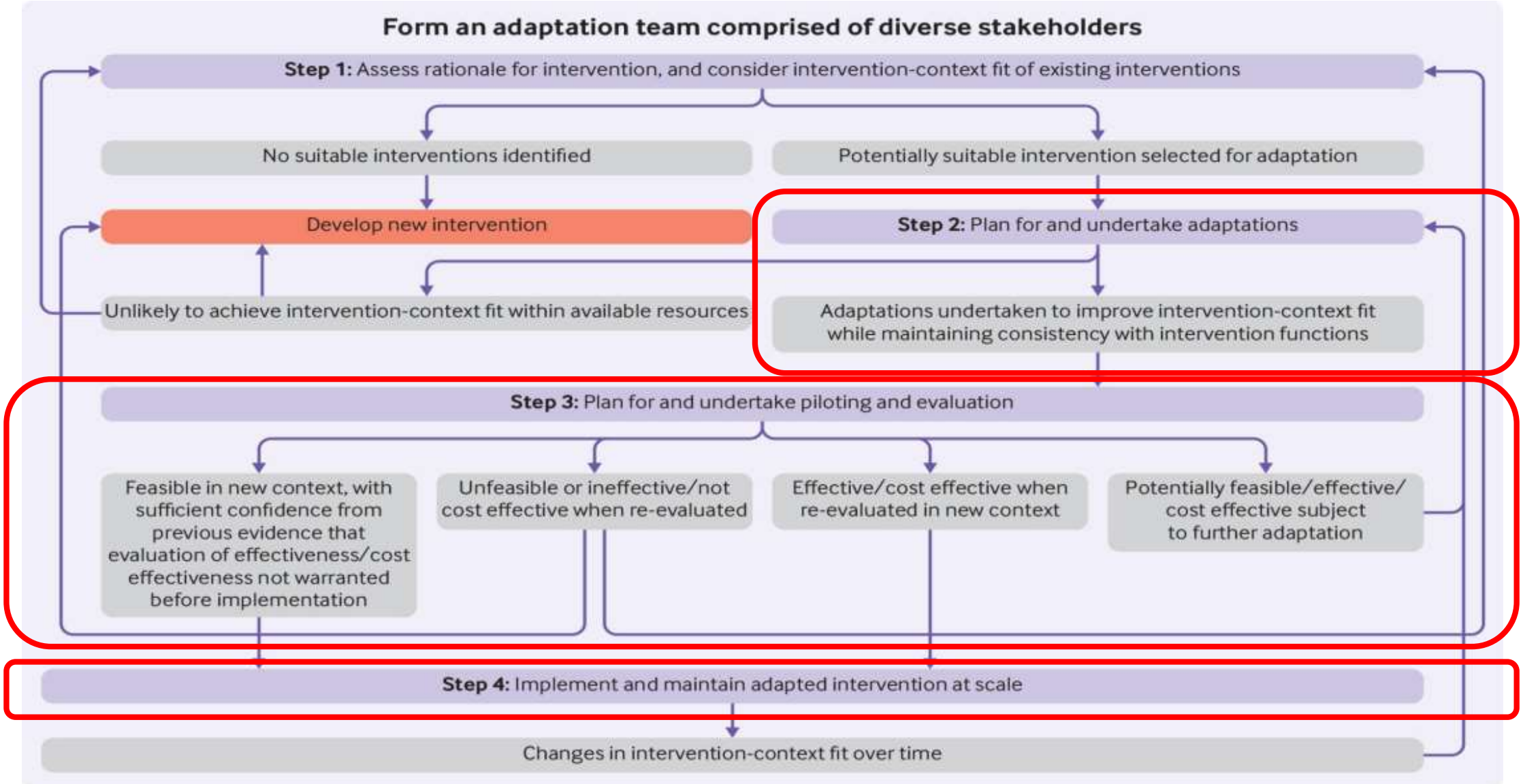
# Implications

- Our current approach may inform how Step 1 of the ADAPT framework maybe operationalized.



# Further research

- Continue to adapt the 5 core interventions using Steps 2-4 in the ADAPT guidance



# Limitations

- Purposive sampling of participants via the investigators' professional networks might induce researcher bias in the selection process.

→ Nevertheless, we believe that the impact of researcher bias would be minimal, as the local stakeholders-endorsed peri-discharge complex interventions could not be established unless participants across all disciplines arrived at consensus.

- The endorsed peri-discharge complex interventions were generated without involvement of patients and caregivers.

→ Future patient and public involvement efforts are required for co-producing intervention details as well as their implementation strategies.

# Conclusions

This study has successfully

(i) applied the GRADE EtD framework for starting adaptation process of peri-discharge complex interventions, and

(ii) established a list of local stakeholders-endorsed peri-discharge complex interventions for reducing 30-day hospital readmissions.

Before scaling up these interventions in Hong Kong, further studies for improving intervention-context fit, and assessing real world implementation effectiveness are needed.

# Acknowledgement


## Full text can be accessed here:

Zhong CC, Wong CH, Hung CT, Yeoh EK, Wong EL, Chung VC. Adapting evidence-informed peri-discharge complex interventions in reducing 30-day hospital readmissions for heart failure and COPD**.** Health Policy and Technology. 2023 Sep 16:100804.

[IF: 6.8; 4/87 in the HEALTH POLICY & SERVICES]

## Funding support:


- Health and Medical Research Fund, Food and Health Bureau

  [Reference number: 16171031, 2019], Hong Kong SAR Government


## Ethics approval:

This study was approved by the Survey and Behavioural Research Ethics Committee, The Chinese University of Hong Kong, Hong Kong (Reference no.: 012-19). Written informed consent was collected from all participants via email.

## Conflict of interest: None.


THE ECOSYSTEM OF EVIDENCE

Lessons learned in the pandemic era and future challenges

10th International Conference for EBHC Teachers and Developers
10th Conference of the International Society for EBHC
Taormina, 25th - 28th October 2023

#EBHC2023

GIMBE EVIDENCE FOR HEALTH

# Thank you!

Dr. Vincent Chung
Associate Professor
JC School of Public Health & Primary Care,
Faculty of Medicine, The Chinese University of Hong Kong
vchung@cuhk.edu.hk

# Key References


1. WHO Regional Office for Europe's Health Evidence Network (HEN): Do current discharge arrangements from inpatient hospital care for the elderly reduce readmission rates, the length of inpatient stay or mortality, or improve health status? 2005.

2. Fingar K, Washington R. Trends in hospital readmissions for four high-volume conditions, 2009–2013: statistical brief# 196[J]. Rockville, MD: The Healthcare Costs and Utilization Project (HCUP) Statistical Briefs, 2006.

3. Craig P, Dieppe P, Macintyre S, Michie S, Nazareth I, Petticrew M. Developing and evaluating complex interventions: the new Medical Research Council guidance. Bmj 2008; 337.

4. Urbanski D, Reichert A, Amelung V. Discharge and transition management in integrated care. Handbook Integrated Care: Springer; 2021: 437-51.

5. Zhong C., Wong C., Cheung K., Yeoh, E. K., Hung, C. T., Yip, B. H., Wong, E.L., Wong, S. Y. & Chung, V. C. Effectiveness of peri-discharge complex interventions for reducing 30-day readmissions among COPD patients: overview of systematic reviews and network meta-analysis. International Journal of Integrated Care. 2022.

6. Zhong C., Wong C., Cheung K., Yeoh, E. K., Hung, C. T., Yip, B. H., Wong, E.L., Wong, S. Y. & Chung, V. C. Peri-discharge complex interventions for reducing 30-day hospital readmissions among heart failure patients: overview of systematic reviews and network meta-analysis. Perspectives in Public Health, 2020. 1757913920985258.

7. Alonso-Coello P, Schünemann HJ, Moberg J, et al. GRADE Evidence to Decision (EtD) frameworks: a systematic and transparent approach to making well informed healthcare choices. 1: Introduction. bmj 2016; 353.

8. Schünemann H J, Wiercioch W, Brozek J, et al. GRADE Evidence to Decision (EtD) frameworks for adoption, adaptation, and de novo development of trustworthy recommendations: GRADE-ADOLOPMENT[J]. Journal of clinical epidemiology, 2017, 81: 101-110.

9. Hasson F, Keeney S, McKenna H. Research guidelines for the Delphi survey technique. Journal of advanced nursing 2000; 32(4): 1008-15.

10. Veugelers R, Gaakeer MI, Patka P, Huijsman R. Improving design choices in Delphi studies in medicine: the case of an exemplary physician multi-round panel study with 100% response. BMC Medical Research Methodology 2020; 20(1): 1-15

11. Moore G, Campbell M, Copeland L, et al. Adapting interventions to new contexts—the ADAPT guidance. bmj 2021; 374.