INTRODUCTION TO IMPLEMENTATION RESEARCH

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PART 1: IMPLEMENTATION SCIENCE: RESEARCH PERSPECTIVE

PART 2: PREPARING QUALITY IMPLEMENTATION RESEARCH PROPOSALS

IMPLEMENTATION SCIENCE: RESEARCH PERSPECTIVE

Part 1

KNOWLEDGE DISCOVERY AND APPLICATION PROCESSES

Discovery and Production

- Ideas   100,000

- RCTs   100

Application and Implementation

- Aware 100%

- Adhered to 20%

IMPLEMENTATION SCIENCE: RESEARCH PERSPECTIVE

- The scientific inquiry into questions concerning implementation—the act of carrying an intention into effect, which in health research can be policies, programmes, or individual practices

- *BMJ.* 2013; **347**: f6753

- Implementation research emphasizes attention and dynamic adaptation to local context, stakeholders, local care resources, and end-user engagement in understanding how and why change processes work

- *Clin Transl Sci.*2012; **5**: 48-55

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

Optimal care/ Behaviour change

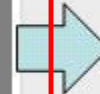Explicitly evaluating your intervention using a theory-driven approach

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Explicitly evaluating your intervention using a theory-driven approach

IDENTIFY THE TARGET BEHAVIORS WHICH ARE REQUIRED FOR SUCCESSFUL IMPLEMENTATION

UNDERSTAND THE TARGET BEHAVIORS IN CONTEXT

CONSIDER FULL RANGE OF POSSIBLE INTERVENTION FUNCTIONS
IDENTIFY SPECIFIC BEHAVIORAL AND POLICY CHANGE TECHNIQUES

BCTs: behavioral change techniques
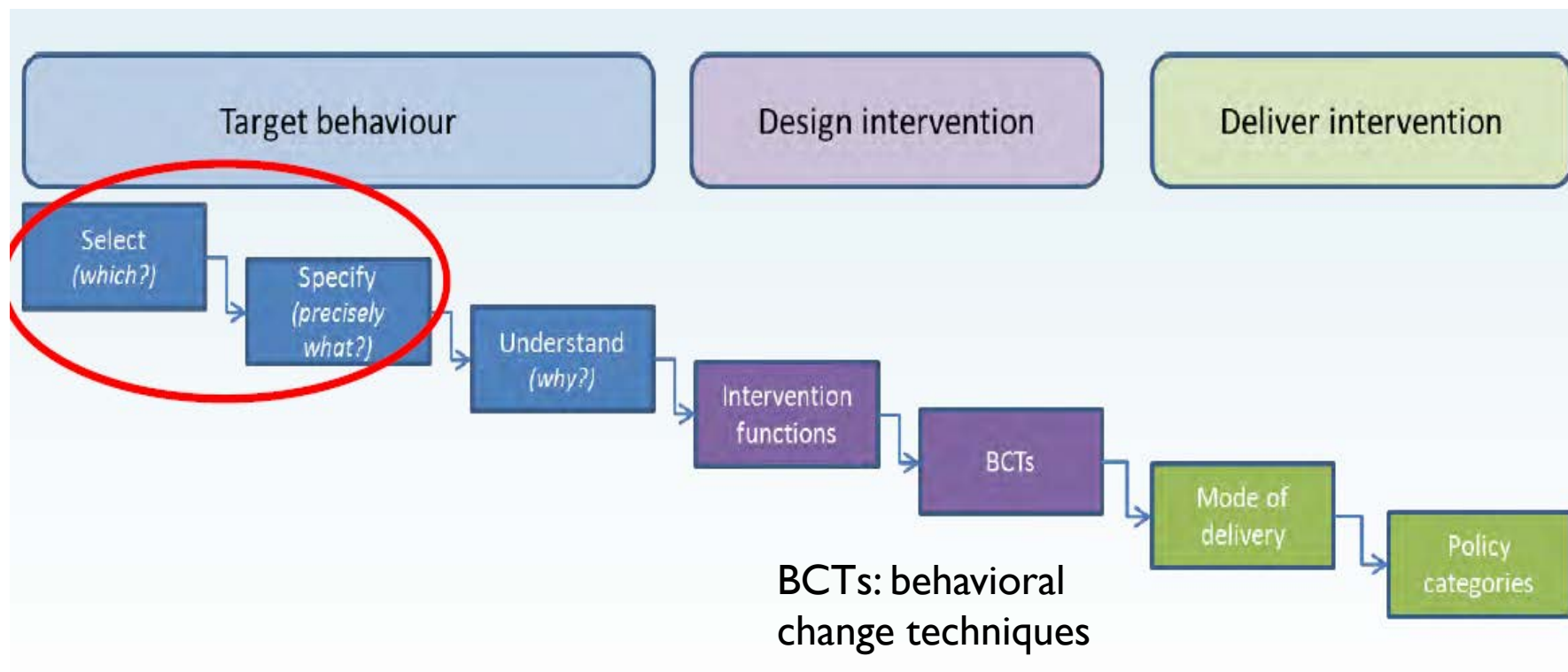
ASSESSMENT OF INFLUENCING FACTORS

- 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 (e.g. 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

- Implementation theories / framework
 - **Promoting Action on Research Implementation in Health Services** (PARIHS) framework
  - TDF (Theoretical Domains Framework)

Theoretical Domains Framework *Cane et al, Implementation Science, 2012, 7:37)*

Figure 1 The fourteen domains of the Theoretical Domains Framework (TDF) for systematic assessment of barriers at individual (professional and patient), team/social and organisational level.

Practical application of the Theoretical Domains Framework: Mapping implementation determinants to relevant implementation strategies using the Behavior Change Wheel
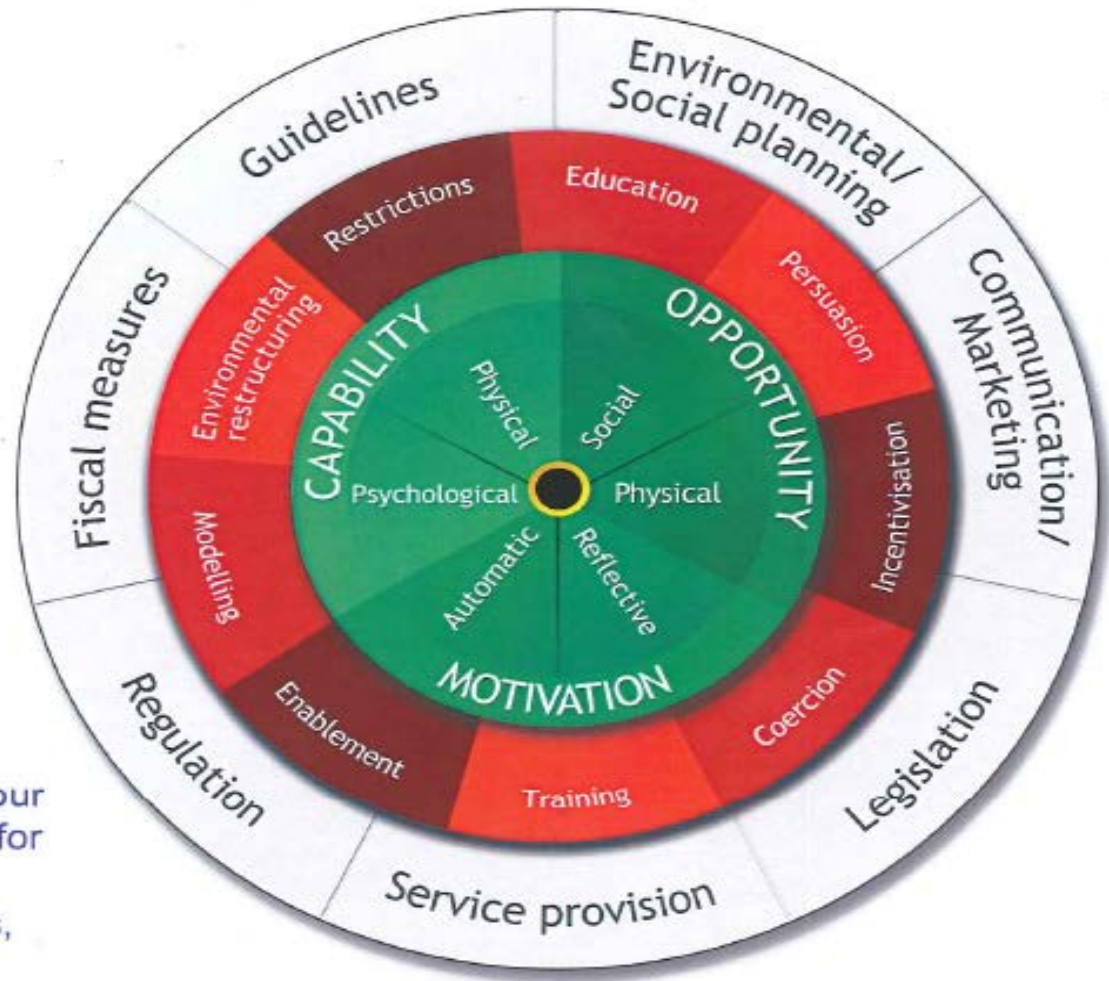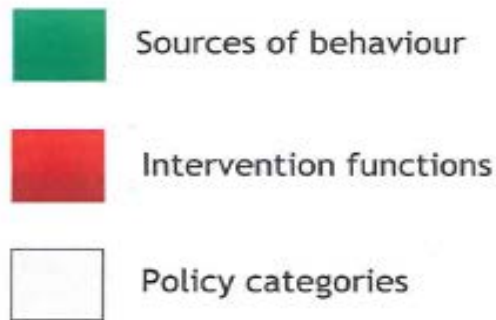
Michie et al (2011) The Behaviour Change Wheel: a new method for characterising and designing behaviour change interventions, *Implementation Science*.

CONSIDERATIONS WHEN DESIGNING AND SELECTING INTERVENTIONS AND POLICIES

- Evidence of effectiveness
- Local relevance
- Practicability
- Affordability
- Acceptability
  - Public
  - Professional
  - Political

Further reading:
Michie, Susan, Lou Atkins, and Robert West. "The behaviour change wheel." *A guide to designing interventions. 1st ed. Great Britain: Silverback Publishing* (2014): 1003-1010.

Article

Barriers and Facilitators to Receiving the COVID-19 Vaccination and Development of Theoretically-Informed Implementation Strategies for the Public: Qualitative Study in Hong Kong

Charlene Hl Wong [1], Claire Cw Zhong [1], Vincent Ch Chung [2,3,*], Per Nilsen [4], Eliza Ly Wong [2] and Eng-kiong Yeoh [2]

- Enhancing uptake of COVID-19 vaccines is an important tool for managing the pandemic. However, in Hong Kong, the COVID-19 vaccination rate in the general population was unsatisfactory during the early phase of the vaccination program.

- This two-part study aimed to

- (i) identify barriers and facilitators to receiving vaccinations [TDF], and

- (ii) develop theoretically-informed implementation strategies [BCW] for promoting uptake

Aim: *To promote implementation of COVID-19 vaccine uptake in the community*

Step 1: Who needs to do what differently?

Government, Health and social care professionals and the Public

Step 2: Using a theoretical framework, which barriers and enablers need to be addressed?

Implementation theory informed assessment using the TDF – then mapped to BCW

Step 3: Which intervention components could overcome the modifiable barriers and enhance the enablers?

Developed 7 implementation interventions using BCW. Addressing determinants suggested by TDF analysis

Step 4: How will we measure behaviour change?

To evaluate implementation, services and client outcomes

The evidence practice gap

Perceived quality problem or emergence of new evidence

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Explicitly evaluating your intervention using a theory-driven approach

We generated 7 locally relevant implementation interventions for promoting vaccine uptake – what' next?

TYPES OF OUTCOMES IN IMPLEMENTATION RESEARCH

Implementation Outcomes	Service Outcomes*	Client Outcomes
Acceptability Adoption Appropriateness Costs Feasibility Fidelity Penetration Sustainability	Efficiency Safety Effectiveness Equity Patient-centeredness Timeliness	Satisfaction Function Symptomatology
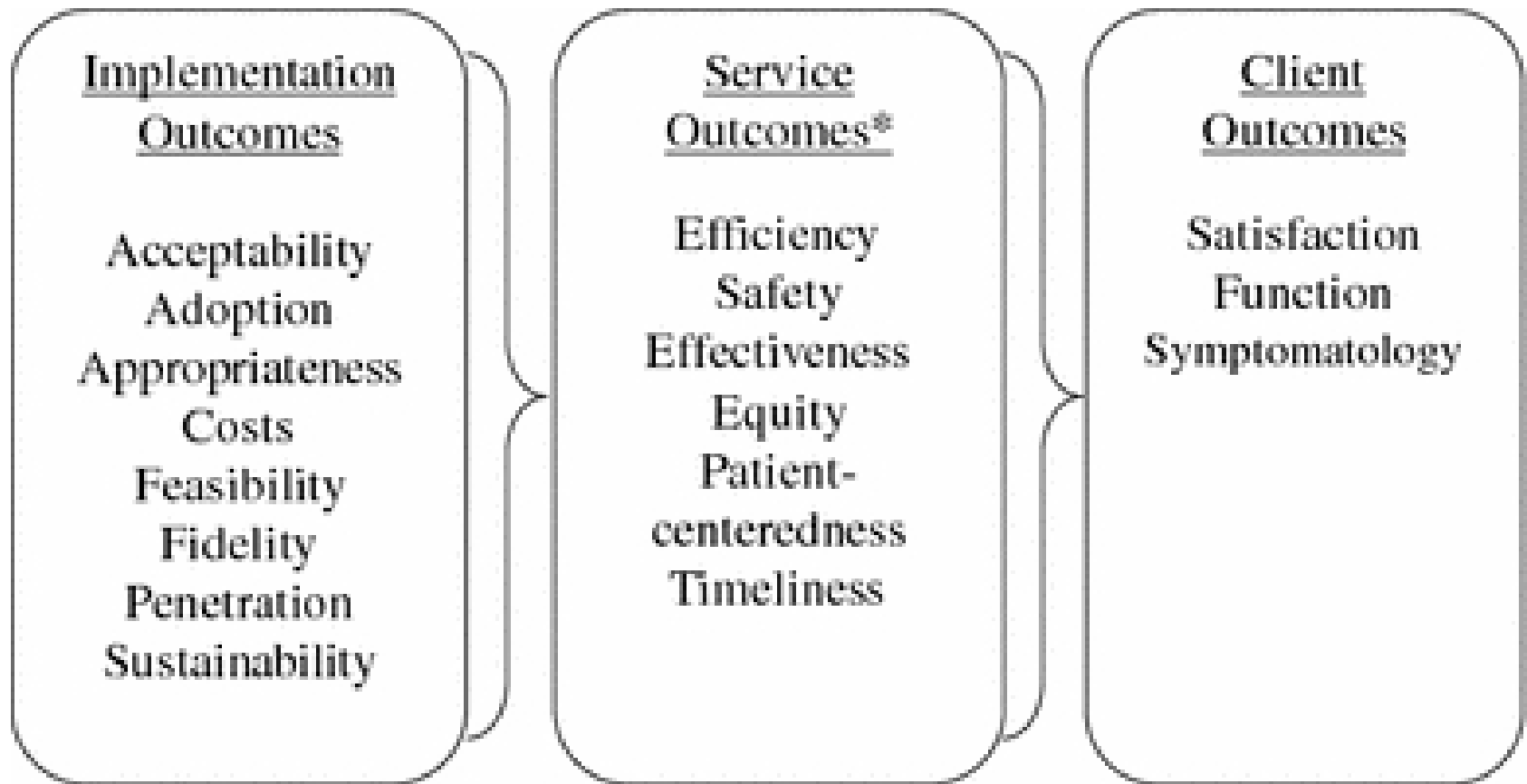
*IOM Standards of Care

Design Characteristics of Clinical Effectiveness and Implementation Trials

Design Characteristic	Clinical Effectiveness Trial	Implementation Trial
Test	The vaccine interventions per se	Implementation interventions or strategy for promoting vaccine uptake
Typical unit of randomization	Patient, clinical unit	Provider, clinical unit, or community
Typical unit of analysis	Patient	Provider, clinical unit, or community
Summative outcomes	Health / clinical outcomes; process/quality measures typically considered intermediate; costs	Public uptake of the vaccine; process measures/quality measures typically considered outcomes

PART 2: PREPARING QUALITY IMPLEMENTATION RESEARCH PROPOSALS

- International guidance and viewpoints:

- Crable, Erika L., Dea Biancarelli, Allan J. Walkey, Caitlin G. Allen, Enola K. Proctor, and Mari-Lynn Drainoni. "Standardizing an approach to the evaluation of implementation science proposals." *Implementation Science* 13, no. 1 (2018): 1-11.

- Proctor, Enola K., Byron J. Powell, Ana A. Baumann, Ashley M. Hamilton, and Ryan L. Santens. "Writing implementation research grant proposals: ten key ingredients." *Implementation Science* 7, no. 1 (2012): 1-13.

10 key contents to be described in the proposal

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

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

1. THE CARE GAP OR QUALITY GAP

- The proposal has clear evidence that a gap in quality exists? (Yes / No)

- _Preferred practice_

- Clearly defined quality gap is supported by local setting data and / or appropriate citations from the literature

- Explicit, well thought out description of the potential for improvement

- _Implementation Science_ 2012 **7**:96 / _Implementation Science_2018 **13**:71

2. THE EVIDENCE-BASED TREATMENT TO BE IMPLEMENTED

- Is the evidence for the program, treatment, or set of services to be implemented demonstrated? (Y / N)

- *Preferred practice*
- Clearly discusses evidence from prior studies concerning the interventions which are planned to be implemented

- Explicit, well thought-out rationale for implementing the interventions in the selected setting, including the potential effect it will have on that setting

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

3. IMPLEMENTATION MODEL / FRAMEWORK AND THEORETICAL JUSTIFICATION

- The proposal delineates a clear implementation research framework/theory/model that informs the design? (Y / N)

- _Preferred practice_

- An implementation science-specific conceptual model or framework is clearly described, with theoretical constructions explicitly described within the proposed setting, population, and intervention contexts

- The implementation science-specific conceptual model or framework is used to frame the proposed study in all aspects including the study questions, aims/objectives, hypotheses, process, and outcome measures

- _Implementation Science_ 2012 **7**:96 / _Implementation Science_ 2018 **13**:71

3. IMPLEMENTATION MODEL / FRAMEWORK AND THEORETICAL JUSTIFICATION

- Section 13(d) of the HMRF application proposal template

- "For project addressing the thematic priority of implementation science, please state clearly the proposed framework(s) / model(s) to analyse barriers and facilitators of implementation outcomes"

4. STAKEHOLDER PRIORITIES, ENGAGEMENT IN CHANGE [I]

- Is there a clear engagement process of the stakeholders in place for the proposed implementation plan? (Y / N)

- *Preferred practice*

- Comprehensive description of who all of the identifiable stakeholders are

- Clear understanding of stakeholder concerns related to the intervention

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

4. STAKEHOLDER PRIORITIES, ENGAGEMENT IN CHANGE [II]

- Clear understanding of stakeholder concerns related to the intervention <u>as evidenced by</u>

  - a stakeholder analysis plan that describes how the applicant will collect comprehensive information on stakeholders interests, interrelations, influences, preferences, and priorities

- Detailed description of how stakeholders were involved in the conceptual design of the implementation strategies, process, and outcomes

5. SETTING'S READINESS TO ADOPT NEW SERVICES/ TREATMENTS/ PROGRAMS

- Is there clear information that reflects the setting's readiness, capacity, or appetite for change, specifically around adoption of the proposed evidence-based interventions? (Y / N)

- *Preferred practice*

- Explicitly describes preliminary data on the assessed organizational and political capacity and readiness for implementation (if possible, pilot assessment completed prior to application)

- Include strategies for how those opposed to change in the study setting will be involved with or have their concerns addressed by study processes or components

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

6. IMPLEMENTATION STRATEGY/ PROCESS

Are the strategies to implement the intervention clearly defined, and justified conceptually? (Y / N)

- *Preferred practice*

- Explicitly describes and theoretically justifies the implementation strategies. Explicitly describes how implementation strategies link to the stated aims/setting/outcome measures of the proposed study

- Explicitly describes how implementation strategies will be observed or empirically tested on their impacts on implementation outcomes

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

7. TEAM EXPERIENCE WITH THE SETTING, INTERVENTION, IMPLEMENTATION PROCESS (I)

- Does the proposal detail the team's experience with the study setting, the intervention whose implementation is being studied, and implementation processes? (Y / N)

- _Preferred practice_

- Clearly describes how team experience relates to the study setting, treatment, and processes

- Staffing plan facilitates successful study completion

- _Implementation Science_ 2012 **7**:96 / _Implementation Science_ 2018 **13**:71

7. TEAM EXPERIENCE WITH THE SETTING, INTERVENTION, IMPLEMENTATION PROCESS (2)

- Does the proposal detail the team's experience with the study setting, the intervention whose implementation is being studied, and implementation processes? (Y / N)

- *Preferred practice*

- Team description, biographical sketches, resumes/CVs depict a multidisciplinary skillset relevant to the proposed study setting, treatment, processes, and other needs

- Clearly describes complementary strengths of the research team and the implementation environment including resources and infrastructure

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

8. FEASIBILITY OF PROPOSED RESEARCH DESIGN AND METHODS

- Does the methods section contain as much detail as possible, as well as lay out possible choice junctures and contingencies, should methods not work as planned? (Y / N)

- _Preferred practice_

- The proposed study includes appropriate methods, interventions, and other components that are achievable and are justified against potential alternatives

- Potential barriers to implementation are clearly identified with potential plans to overcome those barriers

- _Implementation Science_ 2012 **7**:96 / _Implementation Science_ 2018 **13**:71

9. MEASUREMENT AND ANALYSIS SECTION (I)

- Does the proposal clarify the key constructs (i.e. process outcomes and implementation outcomes) to be measured, corresponding to the overarching conceptual model or theory?

- Is a measurement plan clear for each construct?

- Does the analysis section demonstrate how relationships between constructs will be tested?

- (Y / N)

- *Implementation Science* 2012 **7**:96 / *Implementation Science*2018 **13**:71
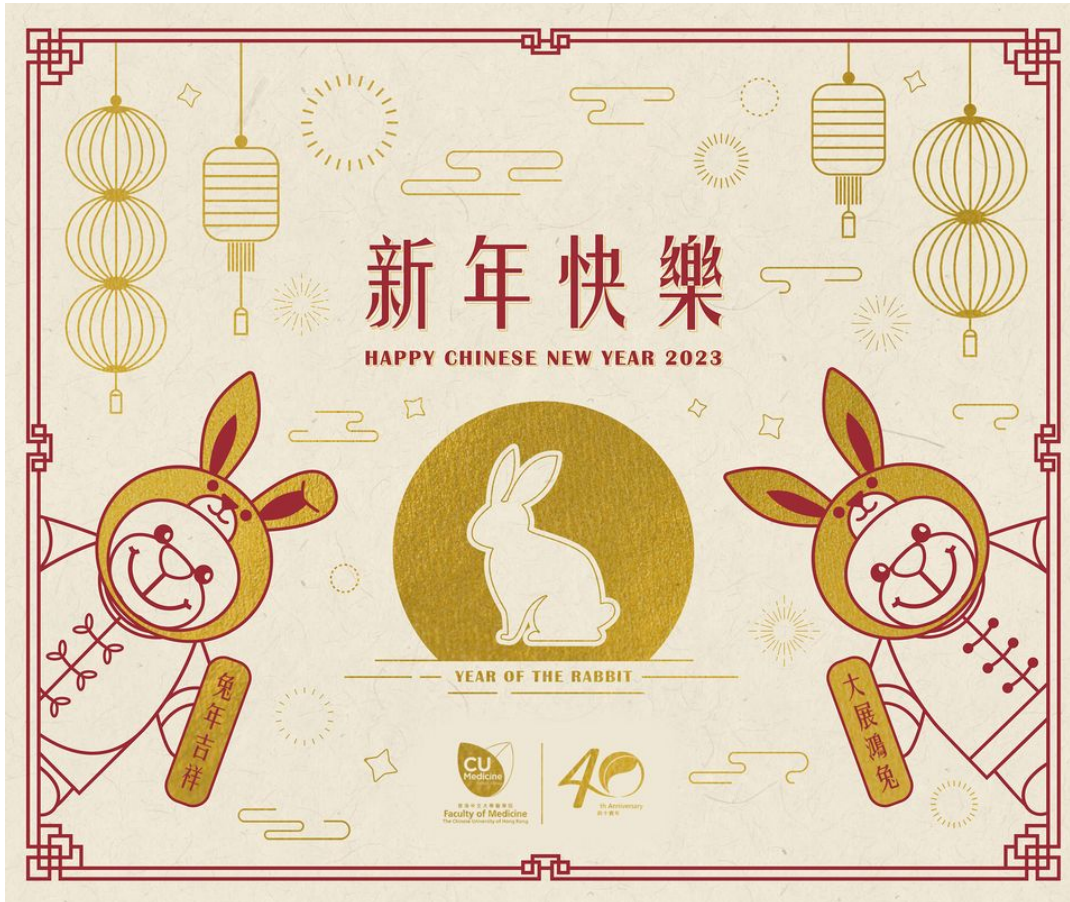
9. MEASUREMENT AND ANALYSIS SECTION (II)

- *Preferred practice*

- Outcomes described are implementation outcomes and/or key process outcomes predictive of care quality

- Process and Implementation Outcomes are clearly linked to the proposed study aims

- Measurement and data analytic plans robustly describe how all variables and outcomes will be measured and are appropriate for the proposed study through a clear theoretical justification

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

10. POLICY/FUNDING ENVIRONMENT; LEVERAGE OR SUPPORT FOR SUSTAINING CHANGE

- Does the proposal address how the implementation initiative aligns with policy trends? (Y / N)

- _Preferred practice_

- The internal/external policy trends and/or funding environment are clearly described

- Potential impact of the intervention is explicitly linked to relevant policies and funding issues

- The dissemination plan for study findings indicates what and how a contribution will be made to the broader policy level

- _Implementation Science_ 2012 **7**:96 / _Implementation Science_ 2018 **13**:71

SUMMARY:
DEFINING CHARACTERISTICS OF IMPLEMENTATION RESEARCH

1. Context specific

2. Demand driven

3. Relevant and agenda setting purpose

4. Multi-stakeholders and multi-disciplinary

5. Real world

6. Real time

7. Methods fit for purpose

8. Focuses on processes and [implementation] outcomes

- The Lancet, 2018, 392(10160): 2214-2228

HAPPY NEW YEAR AND THANK YOU!