Introduction to implementation science

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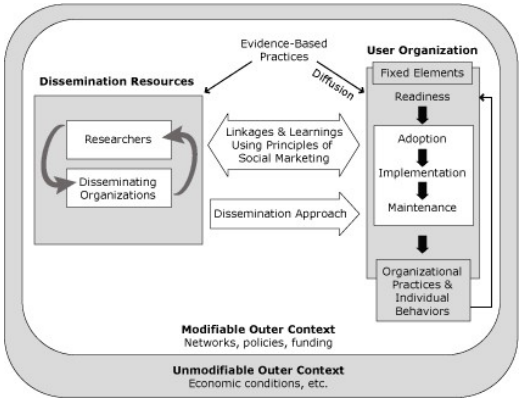
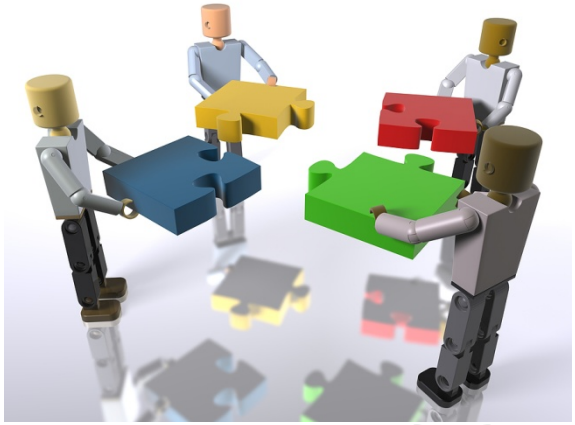


"After decades of improving the health care system, patients still receive care that is highly variable, frequently inappropriate, and too often, unsafe"

Braithwaite, 2013



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

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

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)

Implementation research is used as a general term for research that focuses on the question 'What is happening?' in the design, implementation, administration, operation, services, and outcomes of social programs. Implementation studies can have multiple purposes, such as supporting the impact study by describing the precise nature of the program being tested and explaining the pattern of impact findings over time or across program sites.

Werner, A. A Guide to Implementation Research. 2004

IMPLEMENTATION SCIENCE

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

Implementation improvements

New knowledge, guideline

Is this knowledge applied in practice?

Yes

Prevent relapse, monitor use

No

Implementation interventions, evaluation

Perceived problem in healthcare

Is there "evidence" on best practice?

Yes

Experimentation, evaluation

No

Assessment of influencing factors
Design of implementation strategies

Evidence-based
Informed by theory

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Sustained improvement of patient care…

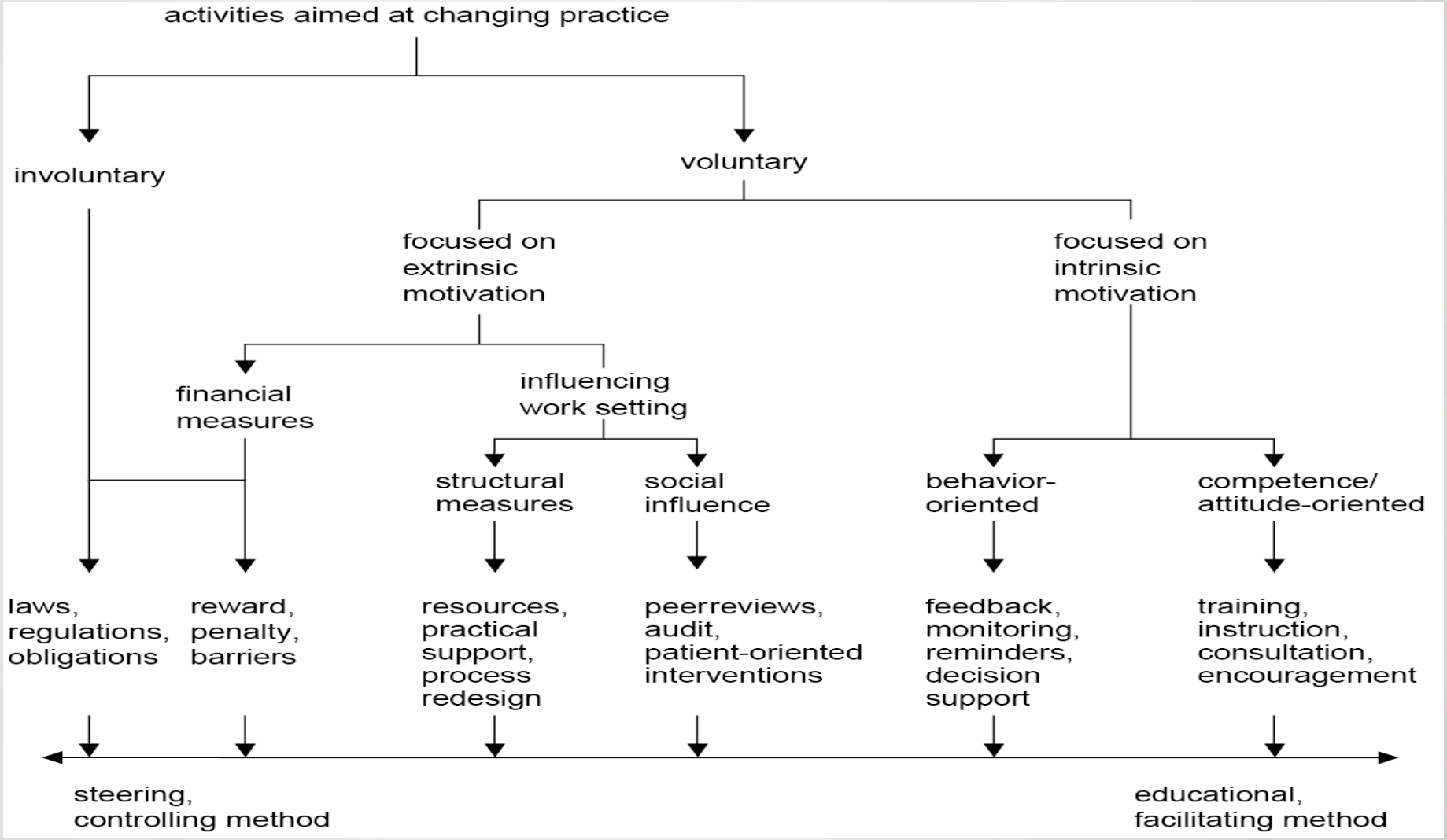
..is usually influenced by a complex mix of factors related to:

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

Grol et al, Milbank Q 2006

Promoting change : Implementation science

Grol, Richard, Marije Bosch, and Michel Wensing. "Development and selection of strategies for improving patient care." *Improving Patient Care: The Implementation of Change in Health Care, Second Edition* (2013): 165-184.



barriers
theory
intervention

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?

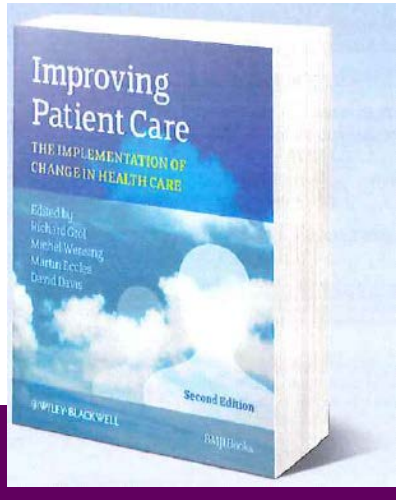
3.Which intervention components (behaviour change techniques) and modes of delivery could overcome the modifiable barriers and enhance the enablers?

4.How can behaviour change be measured and understood?

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

•Optional Tools/Readings

- Improving Patient Care - textbook
- Frameworks…including..
  - Promoting Action on Research Implementation in Health Services (PARIHS) framework
  - TDF (Theoretical Domains Framework)

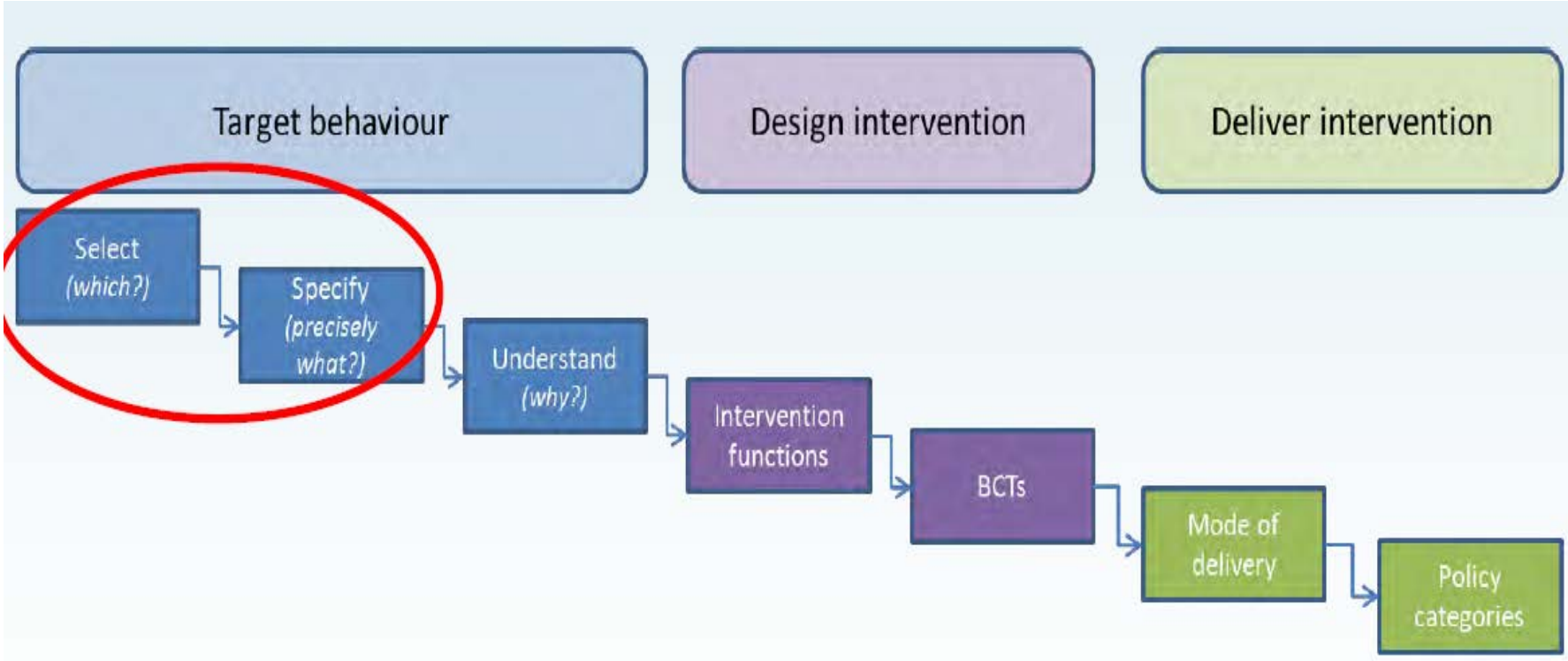


System for designing effective implementation interventions

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?



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.

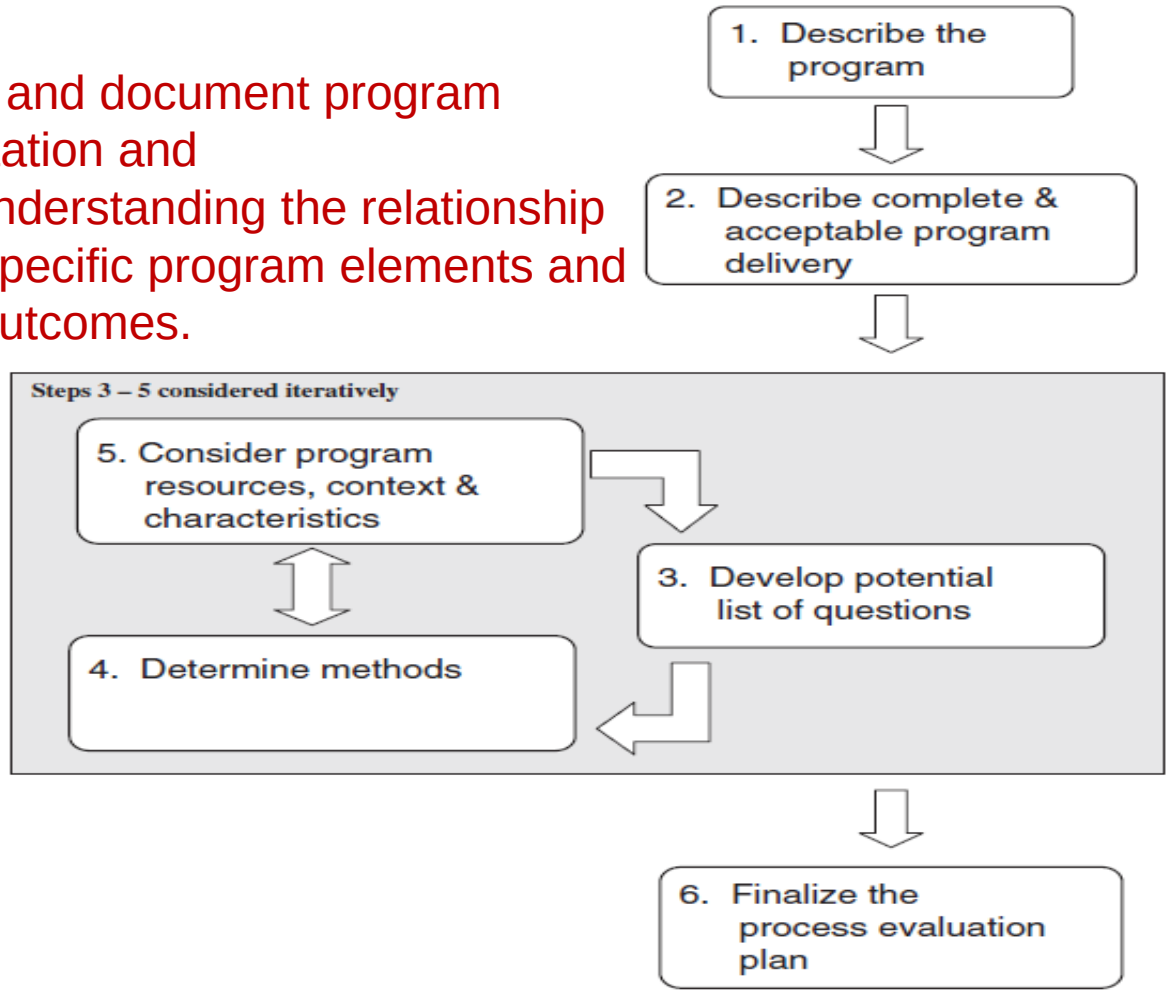

FIGURE 1 Steps in the Process-Evaluation Process

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

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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

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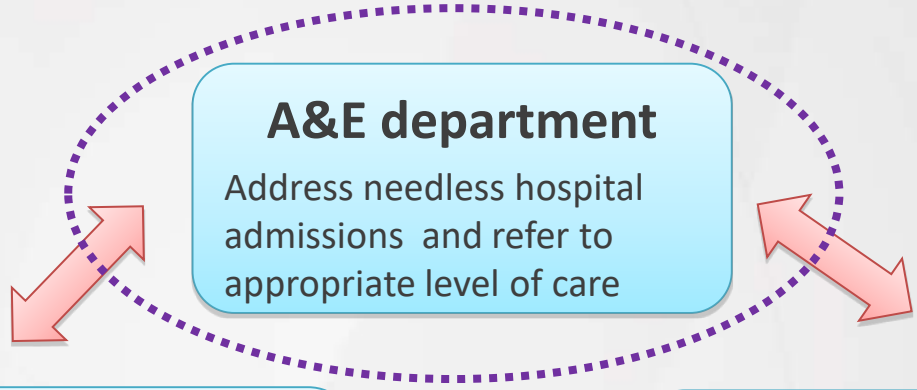
Five key service models

System-wide Medical/Social service integration



Hospital inpatient

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

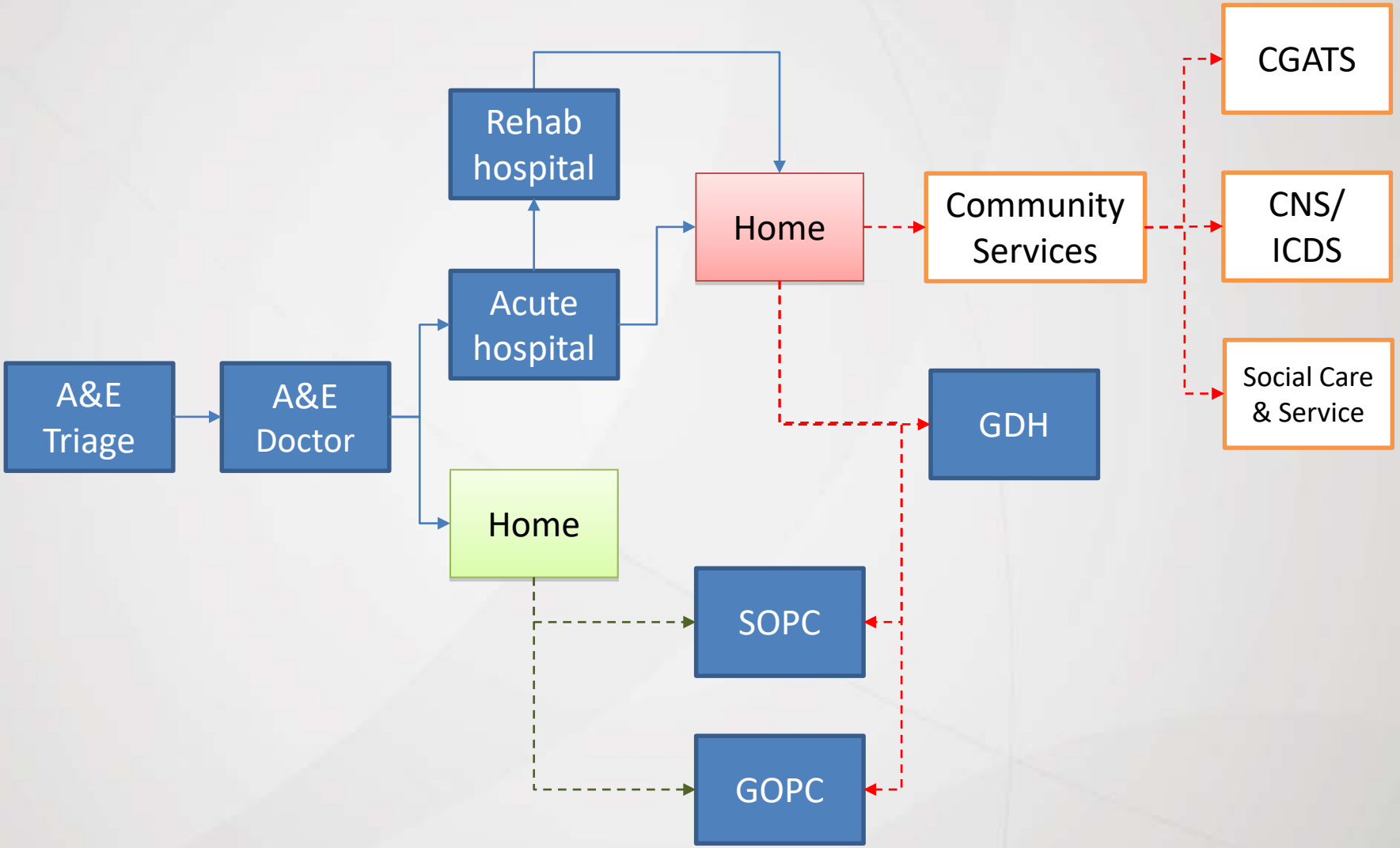
Community services

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

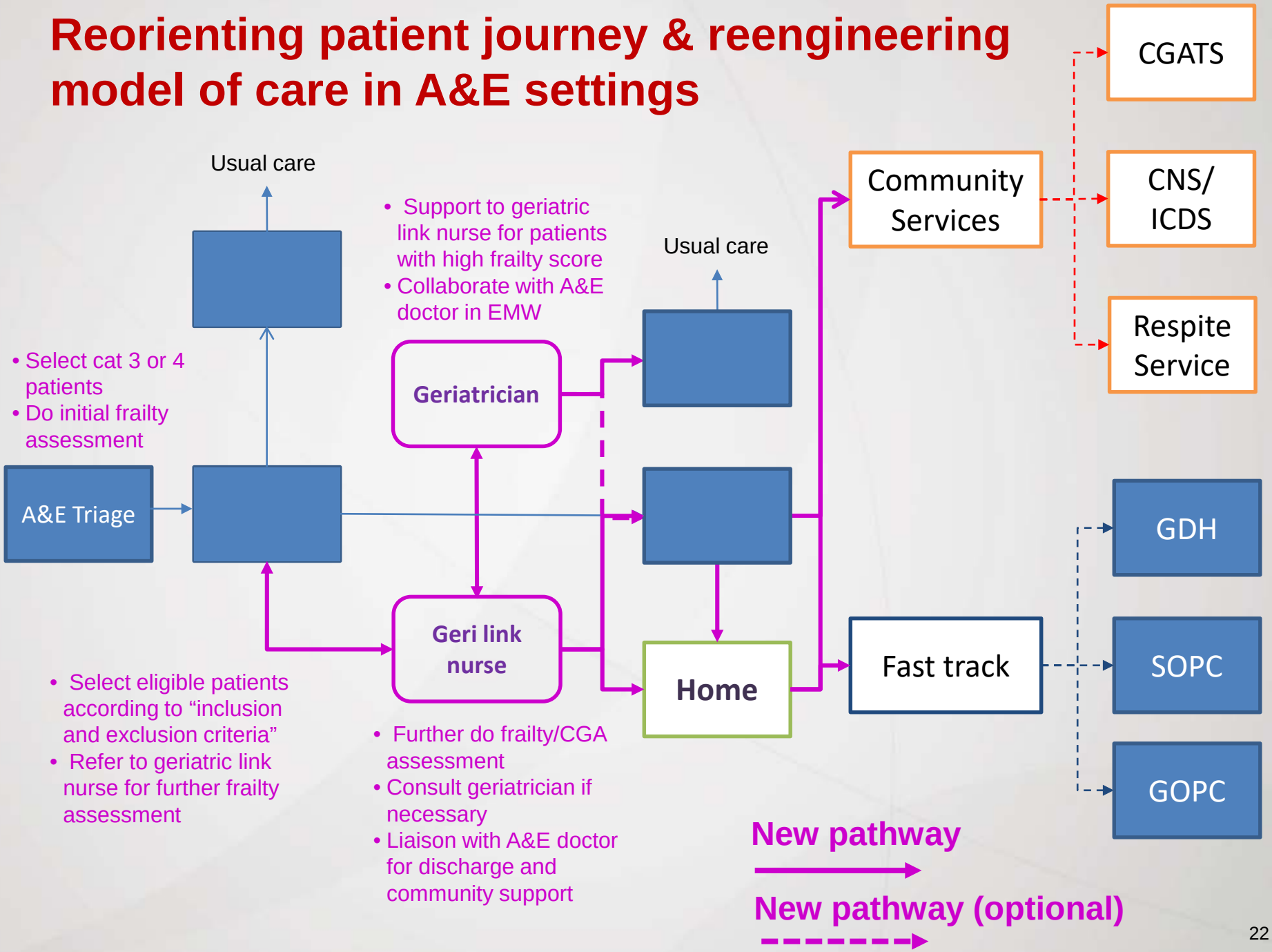
System perspective

- 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”

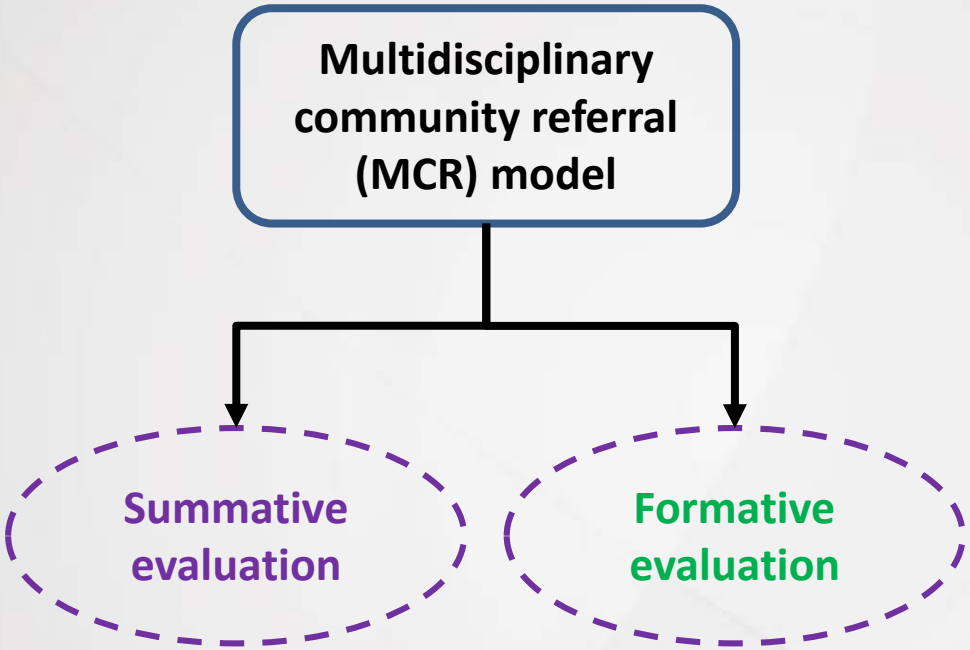
Reorienting patient journey & reengineering model of care in A&E settings



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 multi-disciplinary 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)

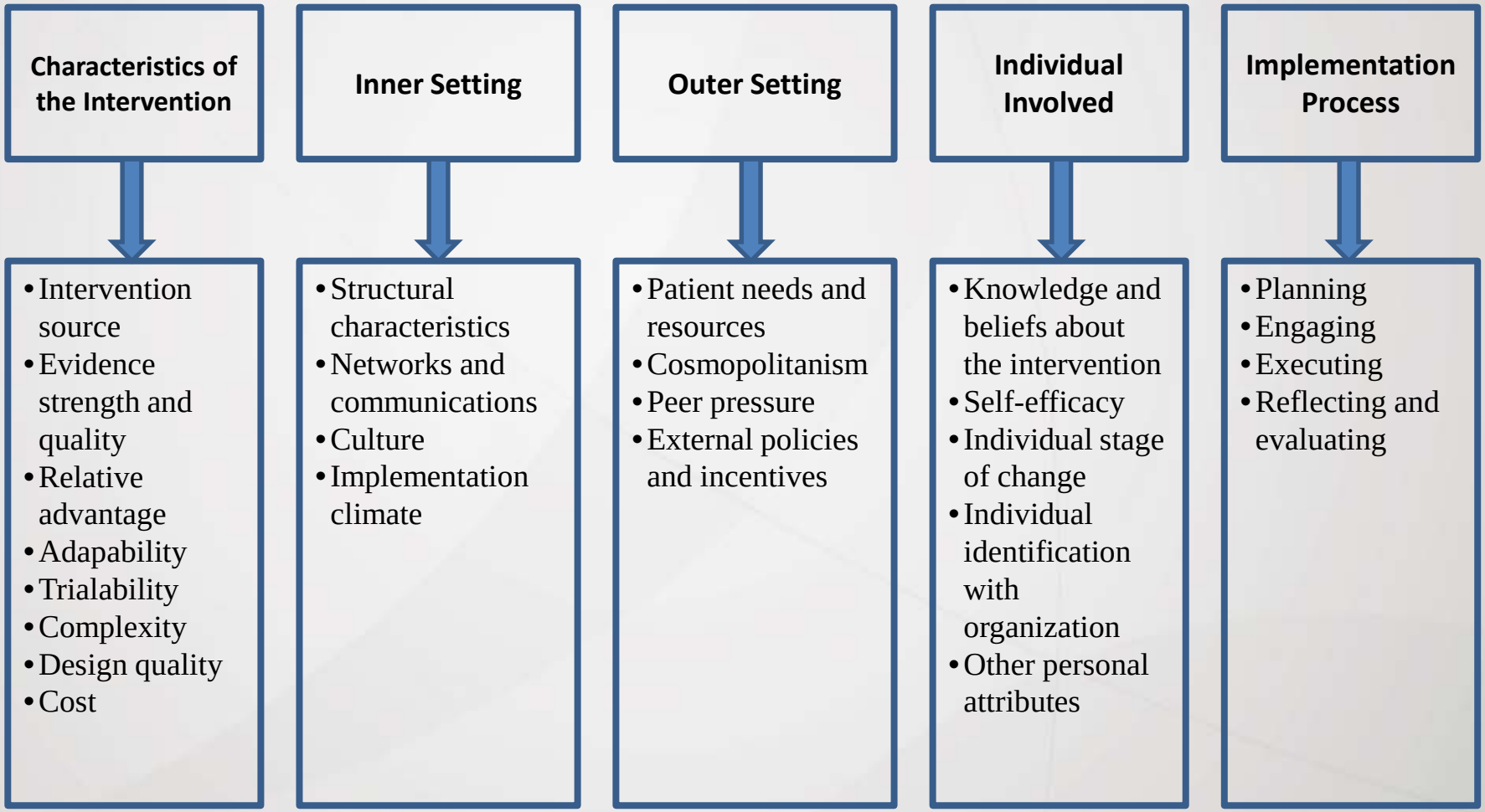
- Assess **barriers and facilitating factors** during the implementation process

- Guiding subsequent theory based generation of tailored implementation strategies (e.g. via Behavioral Change Wheel)

Qualitative inquiry

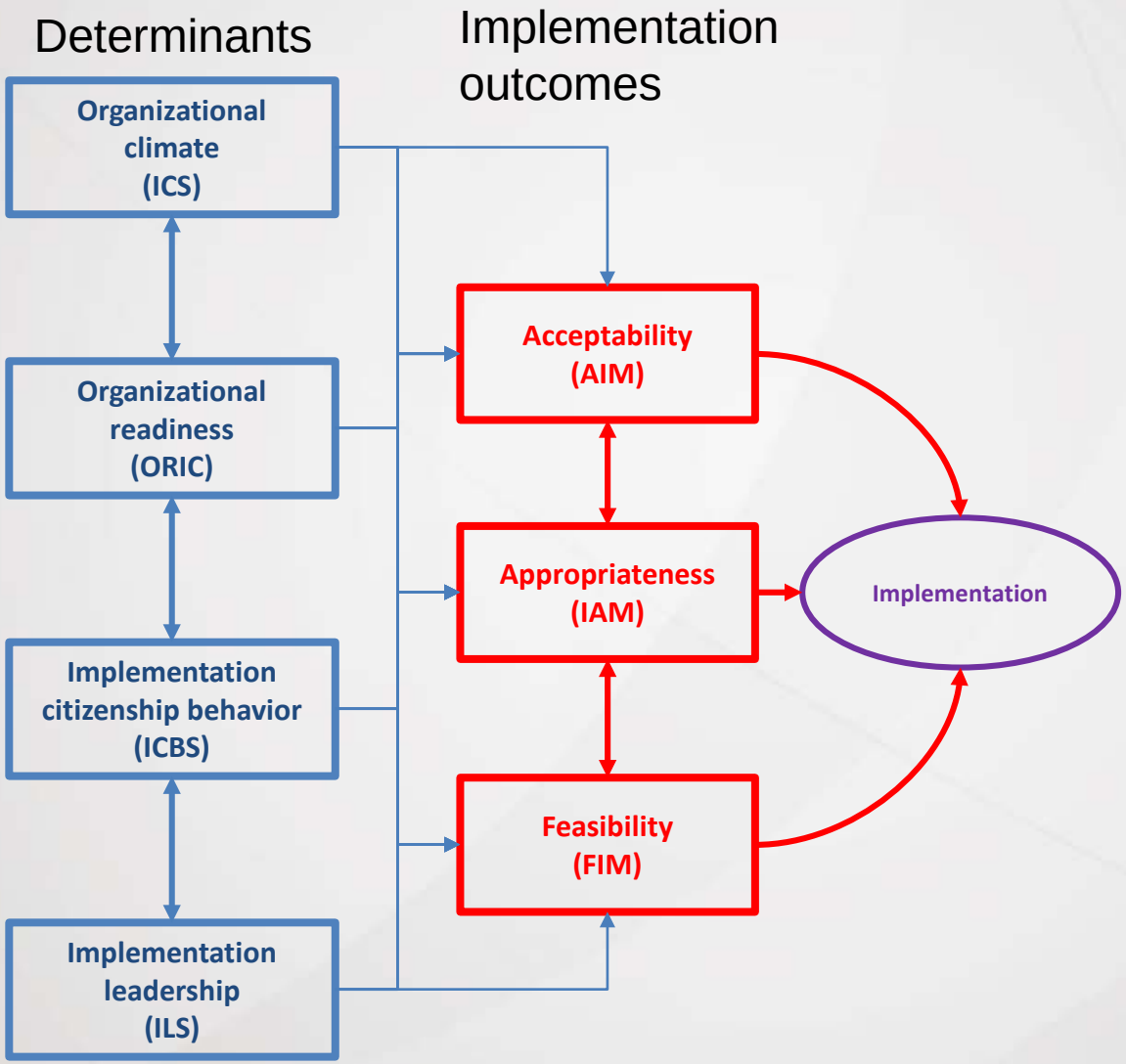
Diagnose implementation problems and generate solutions

Consolidated Framework for Implementation Research (CFIR)



Structural equation modeling

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

- **Facilitating service improvement and innovation**

Thank you!

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