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Introduction in implementation research

Mieke Deschodt, RN, PhD
Sabina De Geest, RN, PhD

Bridging the Gap

Evidence, guidelines, innovations, best practices, etc. are not applied in daily practice

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What is Implementation Science?

The scientific study of methods to promote the integration of research findings and evidence-based interventions into healthcare policy and practice. It seeks to understand the behavior of healthcare professionals and support staff, healthcare organizations, healthcare consumers, and policymakers in context as key variables in the sustainable uptake, adoption, and implementation of evidence-based interventions

(NIH Fogarty International Center, 2018).

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"Trial-world"

- Efficacy
- "Can it work?"
- Null hypothesis
- Keep things clear

"Real-world"

- Effectiveness
- "Does it work and when?
- Alternate hypothesis
- Live with complexity

"Daily practice world"

- Sustainability
- "How to keep it going?
- Implementation strategies

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Creating a value chain in healthcare

1/3 of research evidence gets ever implemented

Slide courtesy of L. Züllig, Duke University, USA 5

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Kellam & Langevin. Prevention science : the official journal of the Society for Prevention Research. 2003 4:137-53; Balas & Boren. Yearbook of medical informatics. 2000:65-70

Key Term in implementation research

Evidence-Based Intervention

- Interventions with proven efficacy and effectiveness

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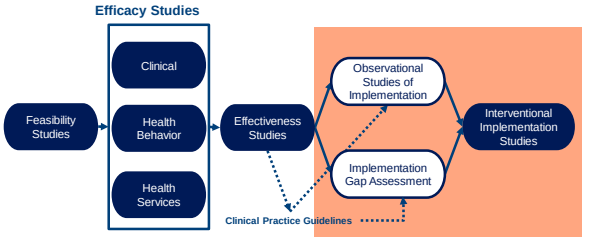
Research Pipeline



Contextual analysis / stakeholder involvement

Intervention strategies and outcomes

Implementation strategies and outcomes

Adapted from Brian Mittman, 2010

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Planning your implementation research project in 7 steps

1. Determine the quality or care gap
2. How strong is the evidence base?
3. Stakeholder priorities & engagement
4. Setting's readiness for adoption
5. Conceptual Model / Theoretical Framework
6. Implementation Strategy
7. Measurement and Analysis

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A practical example of an implementation research project in UZ Leuven

G-COACH
Geriatric co-management for cardiology patients in the hospital

Aim: Develop, implement and evaluate a geriatric co-management program for cardiology patients

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1. Determine the quality or care gap

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Deschodt *et al. BMC Medicine* 2013, 11:48
http://www.biomedcentral.com/1741-7015/11/48

BMC Medicine

RESEARCH ARTICLE Open Access

Impact of geriatric consultation teams on clinical outcome in acute hospitals: a systematic review and meta-analysis

Mieke Deschodt[1,2*], Johan Flamaing[2], Patrick Haentjens[3], Steven Boonen[2,4] and Koen Milisen[1,2*]

- No consistent impact on clinical outcomes
- Reasons for non-effect
  - Lack of adherence to the team's recommendations
  - Lack of control over care
  - Interventions on patient level only
  - Not as proactive as intended
- Implications for general practice
  - How to increase adherence rates?
  - More proactive? → URGENT
  - Co-management instead of consultation? → G-COACH

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2. How strong is the evidence base?

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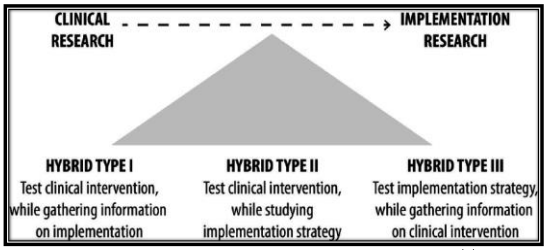
Implementation research designs

Hybrid effectiveness–implementation designs as part of the clinical research continuum



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Adapted from Curran G. Effectiveness-implemenation hybrid designs: combining elements of clinical effectiveness and implementation research to enhance public health impact, Medical care 2012

Age and Ageing 2017; 0: 1–8
doi: 10.1093/ageing/afx051

SYSTEMATIC REVIEW

Effectiveness of in-hospital geriatric co-management: a systematic review and meta-analysis

Bastiaan Van Grootven[1], Johan Flamaing[2,3], Bernadette Diercxx de Casterlé[1], Christophe Dubois[4,5], Katleen Fagard[3], Marie-Christine Herregods[4,5], Miek Hornikx[6], Annouschka Laenen[7], Bart Meuris[4,5], Steffen Rex[5,8], Jos Tournoy[2,3], Koen Milisen[1,3], Mieke Deschodt[1,3,9]

Potential effect of co-management on in-hospital outcomes

Outcome	N	Effect size	GRADE
Functional status	4	Better in-hospital functional status	Very low
Length of stay	11	-2.6 days, 95% CI (-4.7 to -0.5)	Low
Complications	4	NNT 2 to 7 patients	Very low
Mortality	7	OR = 0.7, 95% CI (0.4 to 1.1)	Very low
30 day readmission rate	3	OR = 1.0, 95% CI (0.5 to 1.7)	Very low

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BMJ Open

Quality indicators for in-hospital geriatric co-management programmes: a systematic literature review and international Delphi study

Bastiaan Van Grootven,[1,2] Lynn McNicoll,[3] Daniel A Mendelson,[4] Susan M Friedman,[4] Katleen Fagard,[5,6] Koen Milisen,[2,5] Johan Flamaing,[5,6] Mieke Deschodt,[6,7] on behalf of the G-COACH consortium

Structure indicators (n = 8)
- Validated screening tool or objective criteria to select patients for the GCP is available to all hospital staff.
- A multidisciplinary care pathway is available detailing the roles and responsibilities of all hospital staff participating in the GCP.
- Evidence-based protocols for the prevention and/or management of geriatric syndromes are available

Process indicators (n = 7)
- GCP starts preoperatively or within 24 hours of hospital admission.
- A member of the geriatric team meets daily with the nurses on the wards participating in the GCP.

Outcome indicators (n = 16)
- Mean length of stay in the hospital.
- Readmission rate within 30 days and three months of hospital discharge.
- Percentage of patients included in the GCP who developed/experienced delirium, urinary tract infection, wound infection, pneumonia or sepsis during hospitalization.

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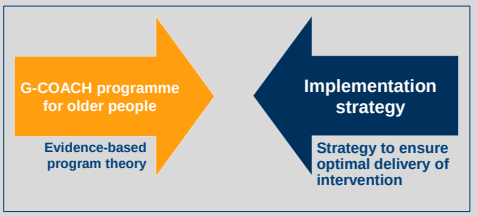
G-COACH: a hybrid 1 effectiveness-implementation design



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3. Stakeholder Priorities & Engagement

4. Setting's Readiness for Adoption

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Context analysis: Checklist to identify determinants of practice

	Determinants of practice	Examples
1	Guideline/innovation factors	Source, quality of evidence, feasibility
2	Health professional factors	Knowledge, awareness, skills, intention, motivation, self-efficacy
3	Patient factors	Patient needs, preferences, beliefs, motivation
4	Professional interactions	Communication, team processes, referral
5	Incentives and resources	Materials, financing, information, education
6	Capacity for organisational change	Mandates, authority, leadership, rules, priorities
7	Social, political, legal	Healthcare budget, contracts, legislation, influential persons, corruption

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Flottorp et al. Implementation Science 2013, 8:35

Contextual analysis: quantitative

ACTA CARDIOLOGICA, 2018
https://doi.org/10.1080/00015385.2017.1421300
ORIGINAL SCIENTIFIC PAPER

Hospitalization-associated disability in older adults with valvular heart disease: incidence, risk factors and its association with care processes

Maren Jonckers[a], Bastiaan Van Grootven[a,b], Ester Willemyns[a], Miek Hornikx[c], Anthony Jeuris[a], Christophe Dubois[c,d], Marie-Christine Herregods[c,d] and Mieke Deschodt[e,f]

Prospective cohort study: CAR, n = 88 ≥ 75y cardiology patients

High prevalence of geriatric syndromes
- 68% ADL impairment (Katz Index)
- 69% cognitive impairment (Mini-Cog)
- 63% frail (Fried criteria)
- 27% depressive symptoms (GDS)
- 22% malnourished; 58% at risk (MNA)

Suboptimal care process
- 3.5 days to rehabiliation = d 1.0 (very strong effect) delirium
- 3.5 days to discharge planning = +0.5 LoS per day of delay
- 29% indwelling catheter = +20% functional decline
- 8% restrained = +43% functional decline

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Contextual analysis: qualitative

- Determine our stakeholders
  - Head nurses cardio, champion nurses cardio, GST, geriatricians, cardiologists, cardiology residents, nurse manager, nurse director, program managers, IT/KWS, social worker, physiotherapists, dietician,...
- Interviews, focus groups & observations
  - Residents coordinate care; yet rotate every two weeks
  - Information on patients' cognition and functional status is missing
  - Residents slow to initiate discharge planning and rehabilitation
  - Focus on cardiac problem, not geriatric needs
  - Routine care, yet not standardized; substantial variability in practice

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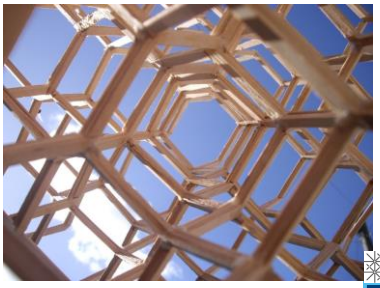
5. Conceptual Model / Theoretical Framework



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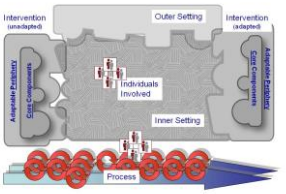
Proctor, Enola K., et al. "Writing implementation research grant proposals: ten key ingredients." *Implementation Science* 7.1 (2012): 96.

Implementation frameworks

Consolidated framework for implementation research (CFIR)



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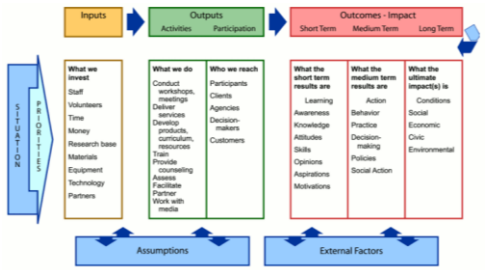
Damschroder et al. Implementation Science 2009; 4: 50

Intervention framework



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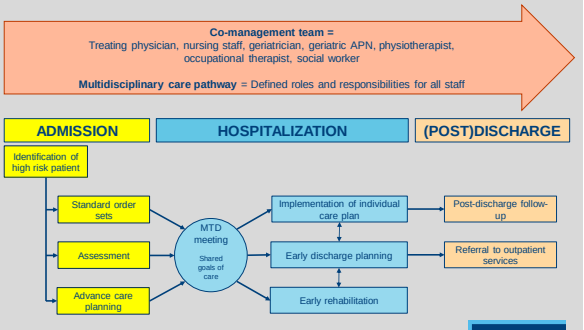
Enhancing Program Performance with Logic Models, University of Wisconsin-Extension, 2003

Theoretical co-management framework



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Intervention development

Stakeholder development of consensus model

- Aim: Find consenus on
  - Feasibility of intervention
  - Acceptability of intervention
- Methods:
  - Focus groups and interviews with local stakeholders
  - Participatory observations
  - Observational pilot and feasibility study

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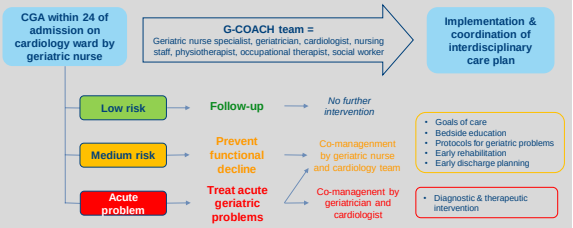
Practical co-management framework



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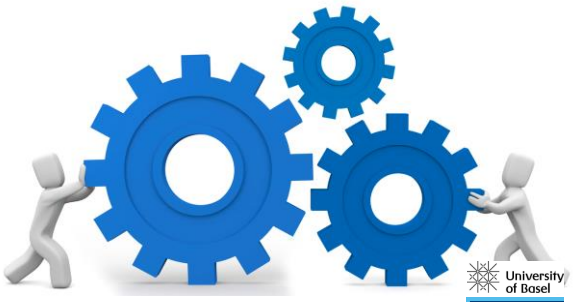
6. Implementation Strategy



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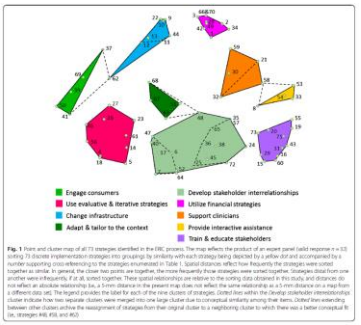
Proctor, Enola K., et al. "Writing implementation research grant proposals: ten key ingredients." *Implementation Science* 7.1 (2012): 96.

Implementation strategies



Cluster:

Develop stakeholder interrelationships

- Recruit, designate, and train for leadership
- Inform local opinion leaders
- Identify early adopters
- Conduct local consensus discussions
- Use advisory boards and workgroups
- Use an implementation advisor
- Visit other sites
- Develop academic partnerships
- …

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Waltz et al. Implementation Science (2015) 10:109

Implementing is a continuous effort

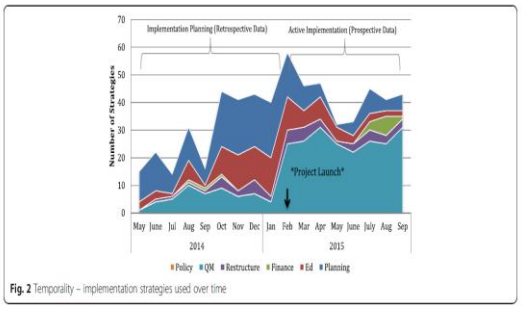

Fig. 2 Temporality – implementation strategies used over time

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Bunger et al. Health Research Policy and Systems (2017) 15:15

G-COACH implementation strategies

- **Orientation**
  - Use of G-COACH acronym in all communication
  - Stakeholder meetings in initiation phase to propose programme
- **Insight**
  - Educational presentations focusing on describing the care processes and outcomes of the current standard of care
  - Publication of poster on participating units detailing the programme components and interventions
  - Adaptations to the electronic patient file
- **Acceptance**
  - Contracting: an expert in group dynamics and leadership organises two sessions between stakeholders
  - Programme support by head of department and head nurses
- **Systems change**
  - Phased implementation with evaluation of feasibility allowing the programme to adjust if necessary
  - Working group: audit and feedback with key stakeholders from every discipline to discuss the adaptations that are needed to the programme
- **Maintenance**
  - Working group: audit and feedback with key stakeholders to discuss necessary adaptations to the programme based on audit and future needs
  - External facilitator → internal facilitator + what can be organized at ward or hospital level
  - Dissemination of programme results to UZ Leuven staff and management

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7. Measurement and Analysis

Proctor, Enola K., et al. "Writing implementation research grant proposals: ten key ingredients." *Implementation Science* 7.1 (2012): 96.

Implementation vs. effectiveness outcomes

Implementation Outcomes
- Acceptability
- Adoption
- Appropriateness
- Costs
- Feasibility
- Fidelity
- Penetration
- Sustainability

Service Outcomes
- Efficiency
- Safety
- Effectiveness
- Equity
- Patient-Centeredness
- Timeliness

Patient Outcomes
- Morbidity
- Mortality
- Health Status
- Quality of Life

Proctor et al. Outcomes for implementation research: conceptual distinctions, measurement challenges, and research agenda. Administration and Policy in Mental Health and Mental Health Services Research 38.2 (2011): 65-76.

Implementation outcomes

Implementation outcome	Working definition
Acceptability	The perception among stakeholders (e.g. patients, providers, managers, policy-makers) that an intervention is agreeable
Adoption	The intention, initial decision, or action to try to employ a new intervention
Feasibility	The extent to which an intervention can be carried out in a particular setting or organisation
- Reach	*the number of eligible patients that were recruited in the intervention*
- Fidelity	*how well the intervention is implemented as defined by the protocol and considers both the implementation of specific intervention components, and the correct timing of the implementation*
- Dose	*how much of the intervention is implemented as defined by the protocol and considers both the duration and frequency of specific intervention components*
Implementation cost	The incremental cost of the delivery strategy (versus Total cost : implementation + intervention cost)
Sustainability	The extent to which an intervention is maintained or institutionalized in a given setting

Proctor et al. Outcomes for implementation research: conceptual distinctions, measurement challenges, and research agenda. Administration and Policy in Mental Health and Mental Health Services Research 38.2 (2011): 65-76.

G-COACH feasibility

- AIM = To test the **feasibility and acceptability**
- Convenience sample: June – December 2017
  - 2 cardiology units
  - 30 patients aged ≥ 75 years admitted for acute cardiac disease
  - 30 healthcare professionals
- **Process evaluation**:
  1. Indicators
  2. structured observations

  → How well is the intervention implemented?
  - **Reach**
  - **Fidelity**
  - **Dose**

  → 1. Not feasible; 2. Feasible with adjustment; 3. Feasible
  3. Focus groups: Understand **experiences**
     - Barriers & facilitators
     - Context

     → Adjust model if needed

G-COACH evaluation

Prospective before-after hybrid effectiveness-implementation study

Implementation

Pre-implementation measurement of **standard of care** → **Feasibility** → Post-implementation measurement of **intervention**

Sept 2016 – June 2017 – Jan 2018 – Oct 2018

Outcome evaluation

Convenience sample
- 2 cardiology units
- 454 patients aged ≥ 75 years
- Acute cardiac disease

Primary outcome
- Inhospital functional decline

Process evaluation

Maintenance of the intervention
- Indicators & observations
- Theory vs implementation failure

Participant experiences
- Focus groups, interviews
- Understand experiences
- Interaction with context

Understand why co-management worked, or did not work
Gather information about the different implementation strategies used

G-COACH methodological framework

1. Development

Meta-analysis — *What is the potential effect?*
Quality indicators — *How should co-management be performed?*
Risk prediction — *Which patients should be targetted for intervention?*

→ Intervention theory: Geriatric co-management care model
Local context; Stakeholder involvement

→ Acceptability

Feasibility — *Is the intervention feasible to perform?*
Effectiveness — *What is the effect?*
Process evaluation — *Why did it work, or why did it not work?*

2. Feasibility/piloting | **3. Evaluation**

4. Preparing for implementation

More info: *https://clinicaltrials.gov/ct2/show/NCT02890927?term=G-COACH&rank=1*

Planning your implementation research project in 7 steps

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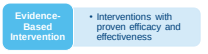
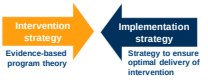
Take home messages

1. Implementation research starts where effectiveness is achieved…



2. … but principles should be integrated at the start of any intervention research!



3. Context analysis and stakeholder involvement as key components for successful implementation

4. Measure the success of your implementation

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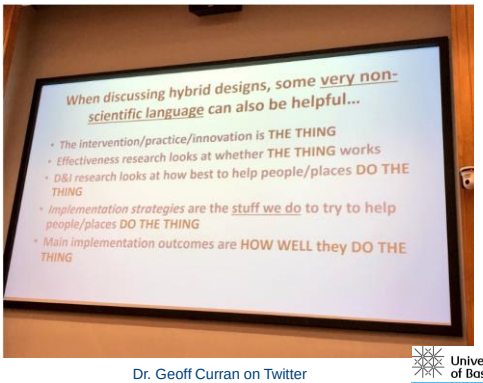

Dr. Geoff Curran on Twitter

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Key papers on implementation research

- **General:** Peters et al. Implementation research: what is it and how to do it? BMJ Open 2013; 347.
- **Hybrid designs:** Curran G. Effectiveness-implemenation hybrid designs: combining elements of clinical effectiveness and implementation research to enhance public health impact, Medical care 2012
- **Context analysis:** Flottorp et al. A checklist for identifying determinants of practice: A systematic review and synthesis of frameworks and taxonomies of factors that prevent or enable improvements in healthcare professional practice. Implementation Science 2013, 8:35
- **Implementation strategies:** Waltz et al. Use of concept mapping to characterize relationships among implementation strategies and assess their feasibility and importance: results from the Expert Recommendations for implementing Change (ERIC) study. Implementation Science 2015.
- **Implementation outcomes:** Proctor et al. Outcomes for implementation research: conceptual distinctions, measurement challenges, and research agenda. Administration and Policy in Mental Health and Mental Health Services Research 2011.
- **Adapting EB interventions:** Bartholomew et al. Using Intervention Mapping to Adapt Evidence-Based Interventions. In: Bartholomew Eldredge L, Markham C, Ruiter R, Fernandez M, Kok G, Parcel G, eds. Planning health promotion programs: an intervention mapping approach. San Francisco, CA: Jossey-Bass; 2016: 597–649.

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Questions for workshop

- Wat is de **level of evidence** van de geïmplementeerde interventie?
- Welke **contextfactoren** werden in kaart gebracht alvorens de implementatie te starten en hoe hebben die de implementatiestrategie mee bepaald/veranderd?
- Welke **stakeholders** werden geconsulteerd alvorens de implementatie te starten + welke werden betrokken bij de ontwikkeling van de implementatiestrategieën?
- Welke **soorten uitkomsten** worden geëvalueerd in het project? Effectiviteitsuitkomsten? Implementatieuitkomsten of beide?
- Eventueel: Op welke manier werd in dit project gewerkt aan **‚duurzame'** implementatie

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