



IMPACT

SWISS IMPLEMENTATION SCIENCE NETWORK

INTERCARE - Nurse-led model of care in Swiss nursing homes: Improving interprofessional care for better resident outcomes

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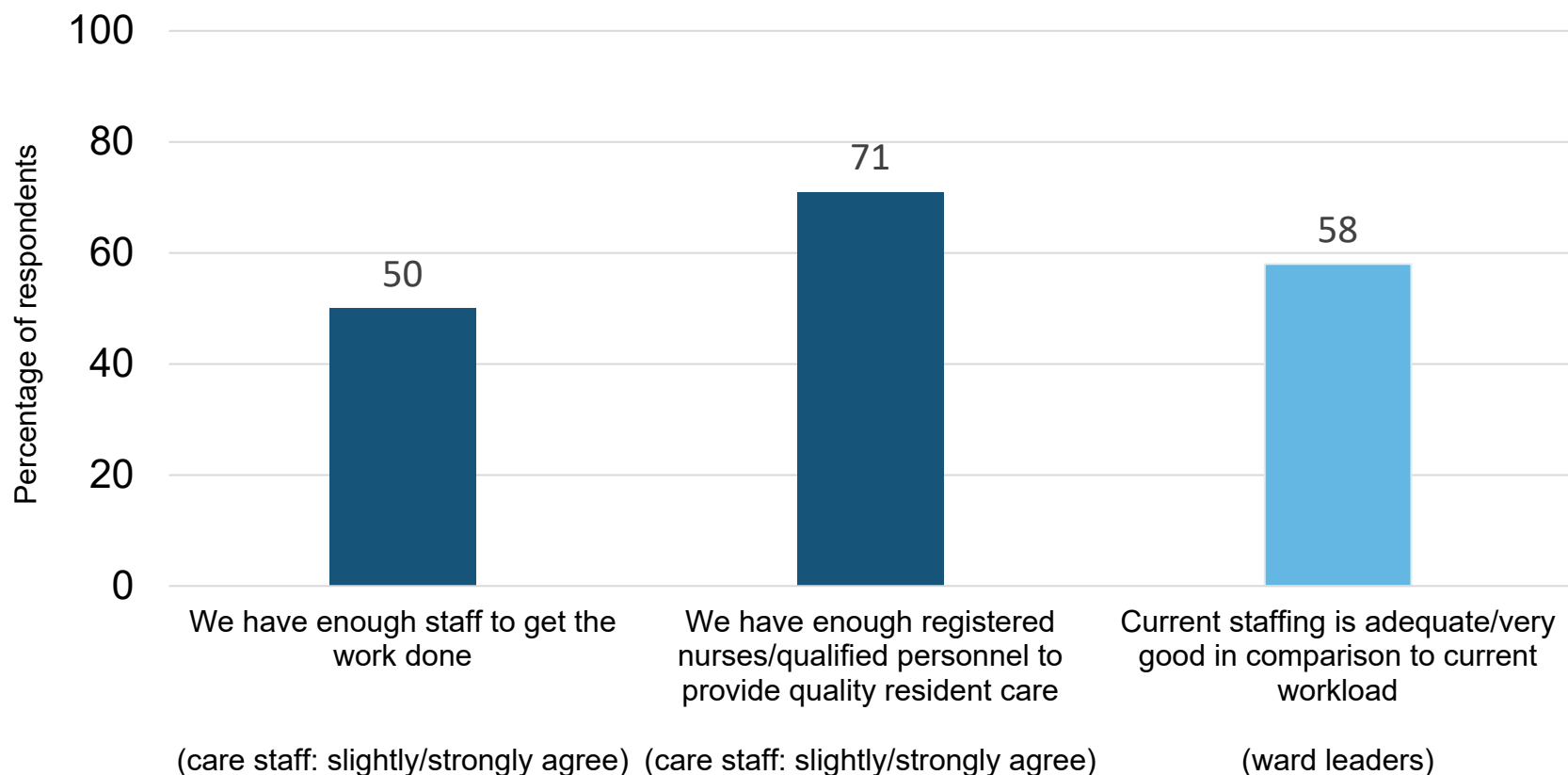
Pflegewissenschaft
Nursing Science

Swiss TPH

Swiss Tropical and Public Health Institute



Current staff situation in Swiss nursing homes



SHURP 2018: Survey of 4'442 care staff and 385 ward leaders in 118 nursing homes in the German and French part of Switzerland

The call for innovation in residential long-term care

- Nursing homes increasingly care for very frail residents with cognitive impairment, multimorbidity and polypharmacy
 - Staffing levels and grade mix do not fit residents' profiles and needs
 - Nursing homes are under high financial pressure, labour market for registered nurses is dry
 - Lacking geriatric expertise impacts coordination, interprofessional collaboration (e.g., with general practitioners, hospitals), quality of care and residents' quality of life
- **We need innovative care models that improve effectiveness of nursing home care while offering high quality of care according to residents' needs**

Meeting the challenge – Leadership perspective

- Interviews with 19 nursing home administrators and directors of nursing in nursing homes with very good results for the national quality indicators in SHURP 2018
- They stress the importance of **deploying key staff**:
Nurses in expanded roles and unit leaders



The problem – avoidable transfers from nursing homes to hospitals

- Between **19% and 67%** of hospitalizations from nursing homes are potentially **avoidable**
 - hospitalizations are associated with functional decline, and other adverse outcomes, such as infection, falls or delirium
- In Switzerland 42% of all hospitalizations from nursing homes in 2013 were potentially avoidable, and could have saved at least **89 million** Swiss francs of healthcare costs

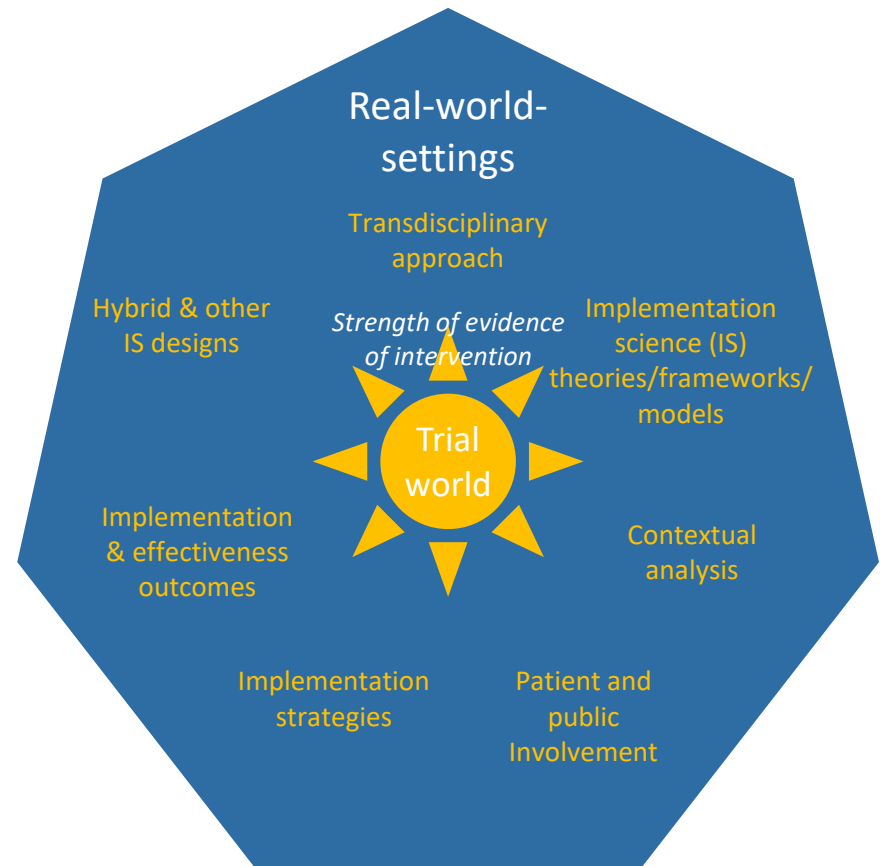


credit: iStock

https://www.emcdda.europa.eu/topics/hospital-emergencies_en?LayoutFormat=print

The Basel Heptagon of Implementation Science

- Key elements of implementation science to successfully cross from the trial world to real world settings



The evidence base – interventions known to reduce avoidable transfers

Implementation of a bundle of interventions, including:

- Strengthening of geriatric expertise
- Supporting early detection of symptoms, decision making
- Strengthening of communication within care teams and in interprofessional team
- Applying advanced care planning with residents and families
- Monitoring quality, performing root-cause analysis



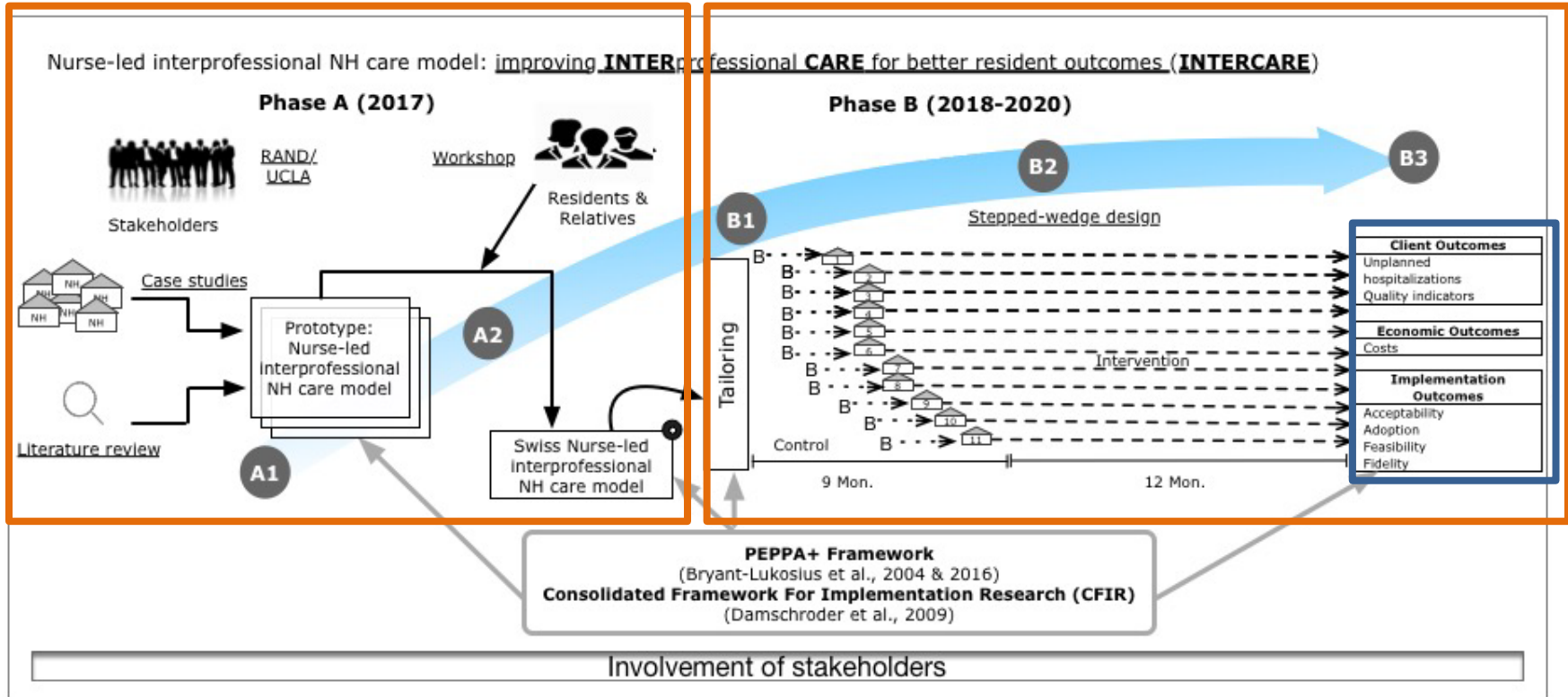
➤ **We need new nurse-led care models to provide comprehensive geriatric care for nursing home residents ⇒ INTERCARE**

INTERCARE – An implementation science project



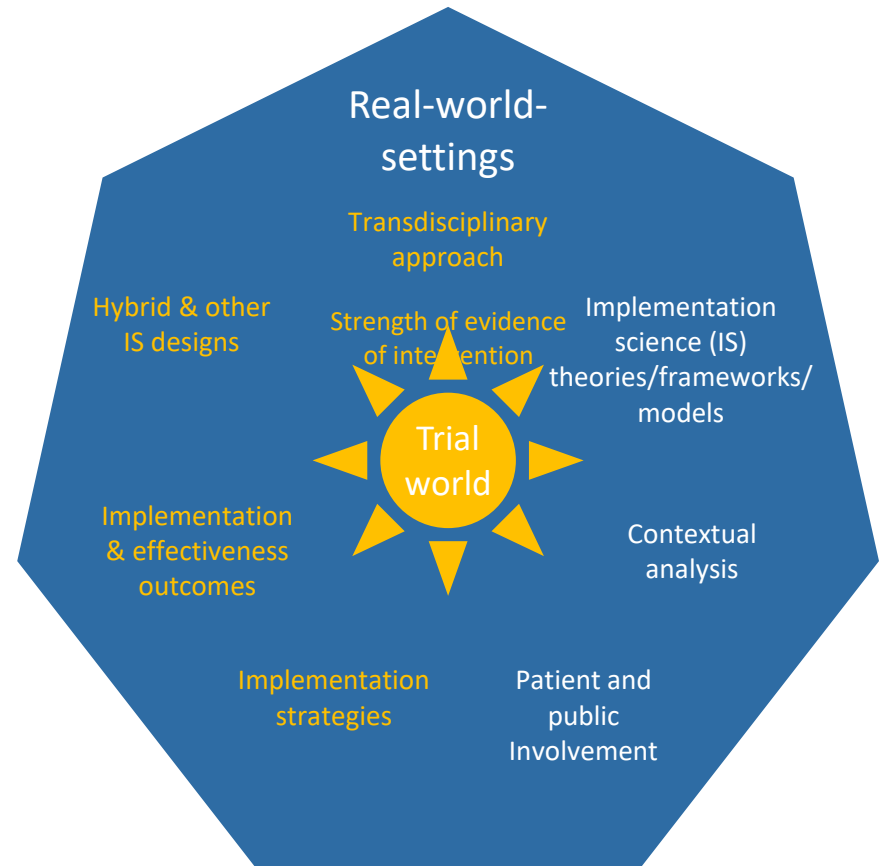
Contextual analysis

Effectiveness-implementation hybrid type II design

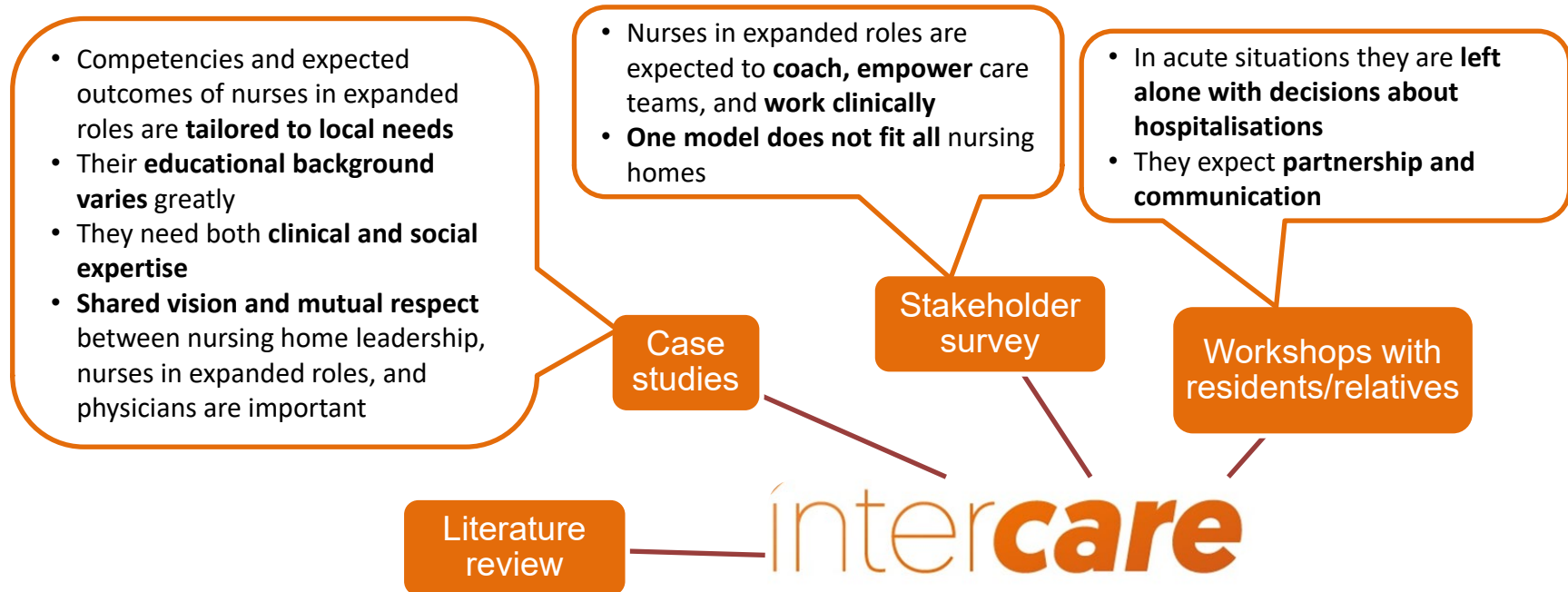


The Basel Heptagon of Implementation Science

Use of **contextual analysis** guided by **CFIR** and **PPI** to build the implementation strategies used in **INTERCARE**



Contextual analysis with stakeholder involvement



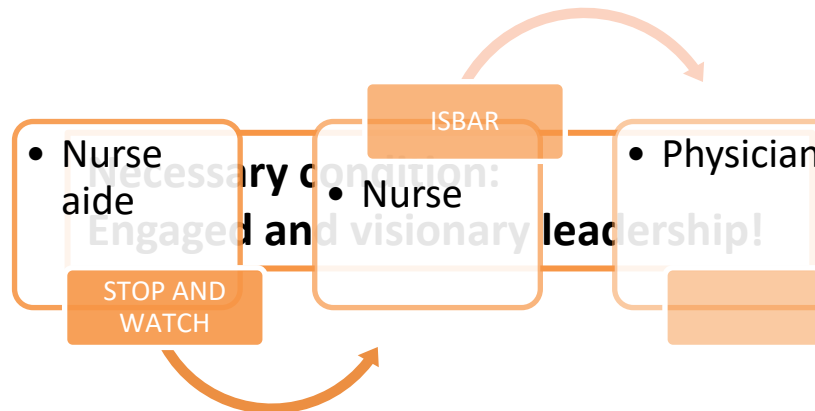
Pflegegeleitete Versorgungsmodelle in Schweizer Pflegeinstitutionen:
 Verbesserung der interprofessionellen Pflege für bessere Bewohnerergebnisse

Basinska et al. 2021a, 2021b, 2021c

The INTERCARE nurse-led care model as a complex intervention

ISBAR: Kommunikation mit dem Arzt / Ärztin bei Meldung von Veränderungen im Gesundheitszustand

- 📌 Interprofessional collaboration
- 📌 INTERCARE nurse
- 📌 Comprehensive geriatric assessment
- 📌 Advanced care planning
- 📌 Evidence-based instruments
- 📌 Data-based quality improvement

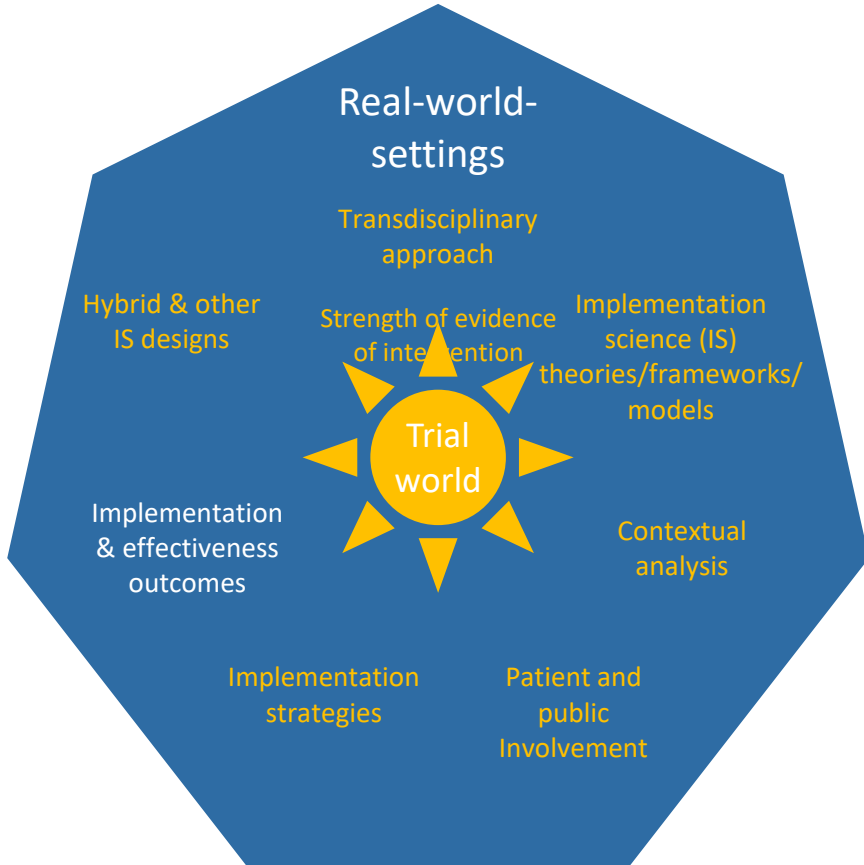


I Identifikation	Identifikation <ul style="list-style-type: none"> • Name und Funktion • Abteilung / Bereich • Bewohner / Bewohnerin: Name, Vorname, Geburtsdatum
S Situation beschreiben	Situation <ul style="list-style-type: none"> • Aktuelles Problem? Seit wann? • Vitalzeichen? Bewusstsein?
B Background unterbreiten	Hintergrund <ul style="list-style-type: none"> • Diagnosen / Nebendiagnosen /Medikation • Aktuelle medizinische / therapeutische Massnahmen • Involvierte Spezialisten / Spezialistinnen
A Assessment aufzeigen	Einschätzung <ul style="list-style-type: none"> • Welcher Art ist ihrer Meinung nach das Problem (physisch, psychisch, kognitiv, funktional)? • Verdachtsdiagnose? Verdacht auf Delir? • Wie schätzen Sie die Dringlichkeit ein?
R Recommendation	Empfehlung <ul style="list-style-type: none"> • Welchen Vorschlag haben Sie für das weitere Vorgehen? • Was erwarten Sie vom Arzt / der Ärztin?

The Basel Heptagon of Implementation Science

Effectiveness outcomes:
unplanned transfers and
ACP

Implementation outcomes:
Implementation costs



Characteristics of participating nursing homes



Location of nursing homes	n	(%)
Urban	8	(72.7)
Suburban or rural	3	(27.3)
Legal status		
Privately funded	9	(81.8)
Publicly funded	2	(18.2)
Bed count	Median	(IQR)
N of long-term beds	120	(64-289)
N of beds participating in INTERCARE	88	(64-114)

Physician model	n	(%)
Physician(s) on-site responsible for \geq 80% of residents	3	(27.2)
External physician(s) responsible for \geq 80% of residents	4	(36.4)
Mixed model	4	(36.4)
INTERCARE nurses (N=19)	Median	(IQR)
INTERCARE nurses per NH	1	(1-4)
Bed responsibility per INTERCARE nurse	95	(24-160)

Characteristics of residents

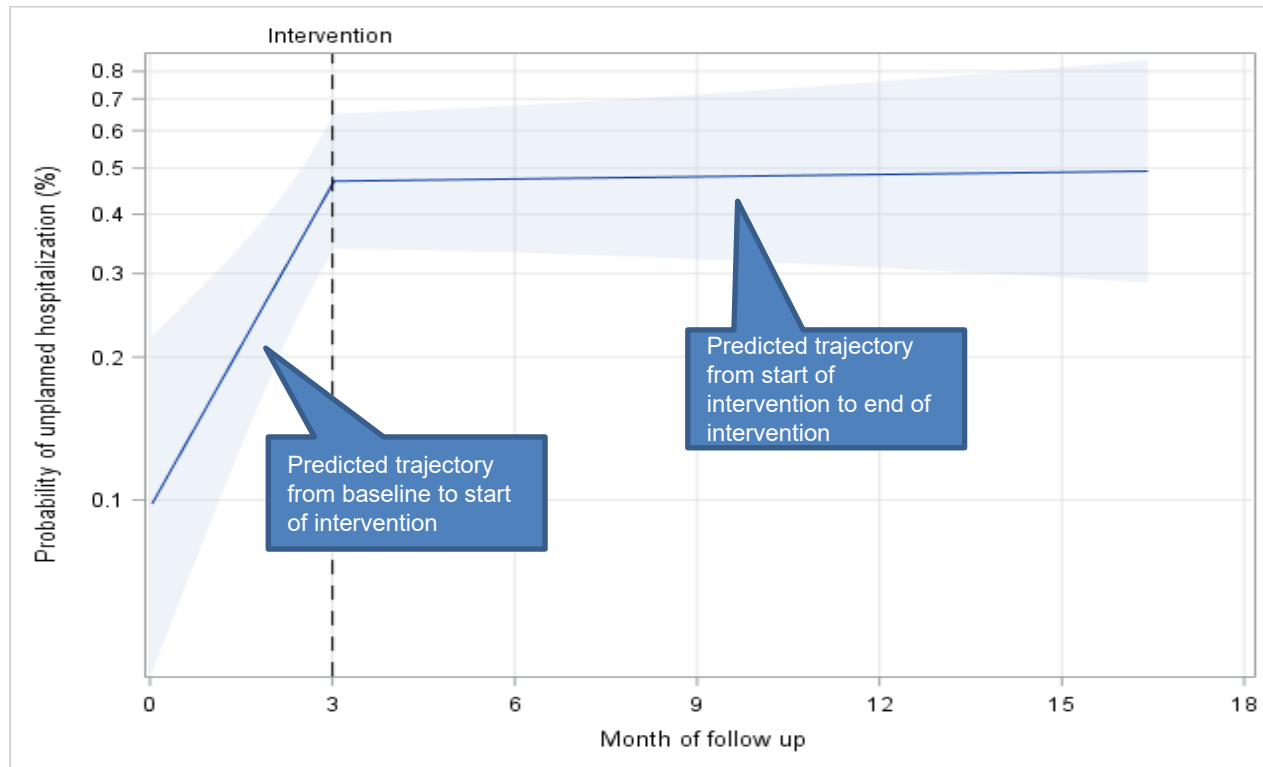
Characteristics	Overall	Residents without transfers	Residents with at least 1 transfer	P value
Number of residents	942	717	225	
Age [median, IQR]	85.5 (80-90)	85.0 (80.0-90.0)	86.0 (79.0-91.0)	0.368
Gender, female [n (%)]	650 (69.0)	497 (69.3)	153 (68.0)	0.589
Length of stay, years [median, IQR]	2.8 (1.7-4.7)	2.8 (1.4-4.8)	2.8 (1.7-4.5)	0.736
Activities of daily living (0-28) (ADL) [n (%)]				0.109
Not/mildly impaired (0-4)	203 (22.1)	145 (20.7)	58 (26.9)	
Moderately impaired (5-23)	699 (76.1)	543 (77.3)	156 (72.2)	
Severely impaired (24-28)	16 (1.8)	14 (2.0)	2 (0.9)	
Cognitive performance scale (0-6) (CPS) [n (%)]				0.004
Intact to mild impairment (0-2)	380 (41.4)	266 (37.9)	114 (52.8)	
Moderate to moderately severe (3-4)	388 (42.3)	306 (43.6)	82 (38.0)	
Severe to very severely (5-6)	150 (16.3)	130 (18.5)	20 (9.2)	

Characteristics of transfers

Characteristics	Overall	Unplanned transfers	Planned transfers	P value
Number of transfers [n (%)]	367(100)	303 (82.6)	64 (17.4)	
Length of stay in hospital in days [median (IQR)]	4 (1-8)	4 (1-7)	4 (1-9)	0.235
Hospital transfer outcome [n (%)]				0.235
Discharged back to NH	344 (95.0)	282 (94.0)	62 (100)	
Death in hospital	17 (4.7)	17 (5.7)	0 (0)	
Discharged elsewhere	1 (0.3)	1 (0.3)	0 (0)	
Missing	5	3	2	
Reason for hospital transfer [n (%)]				-
Injury	128 (34.9)	123 (40.6)	5 (7.8)	
Gastro-intestinal disorder	38 (10.4)	33 (10.9)	5 (7.8)	
Cardiovascular disorder	43 (11.7)	32 (10.6)	11 (17.2)	
Infection ^a	34 (9.3)	31(10.2)	3 (4.8)	
Respiratory disorder	31 (8.4)	30 (9.9)	1 (1.6)	

^a Infection can be concomitant to other conditions, for instance, a resident could be transferred for a respiratory disorder with infection

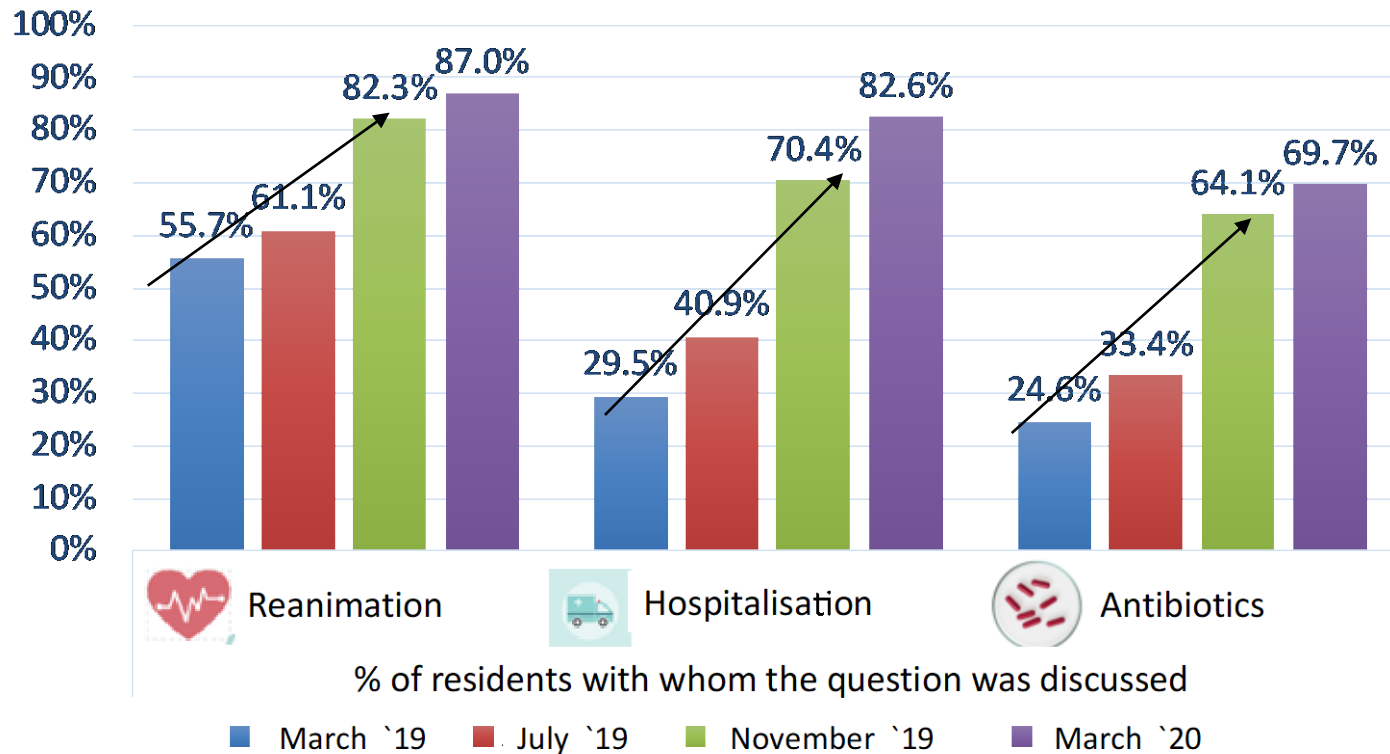
Clinical effectiveness in reducing unplanned hospitalisations



N=942 residents
with a total of 367
transfers
(303 unplanned and
64 planned ones)

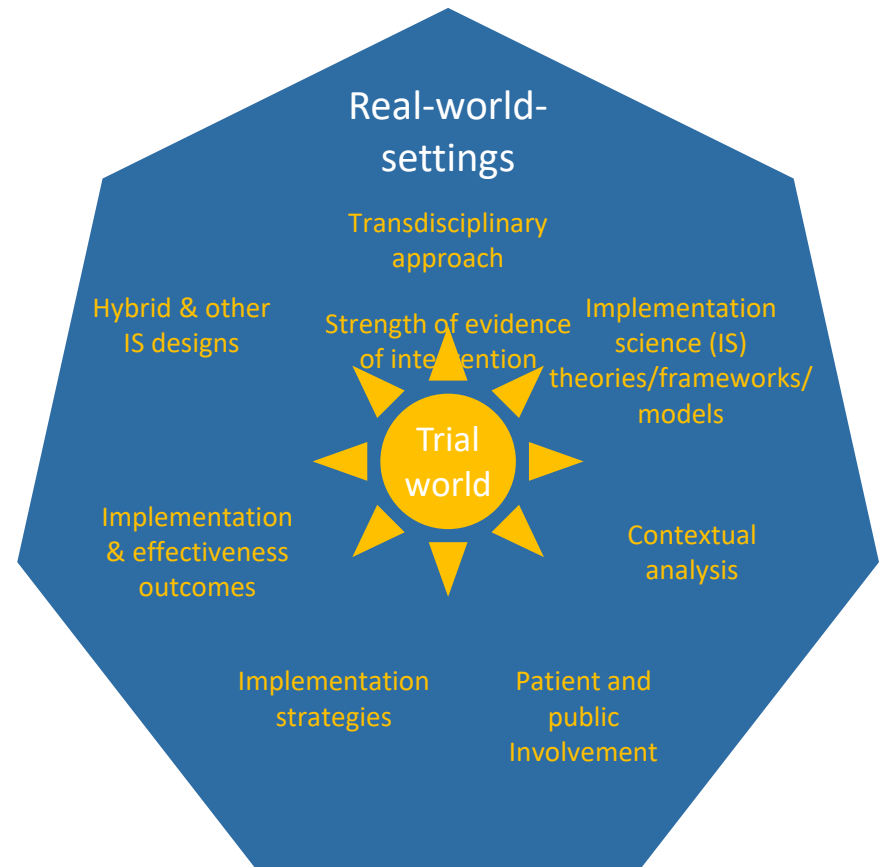
Break in predicted trajectory of unplanned transfers

Increase in % of residents with clarification of three ACP domains



The Basel Heptagon of Implementation Science

- Which element was key to make INTERCARE work?



Costs of implementation strategies – Time-driven activity-based costing (TDABC)

Step-by-step procedure to calculate costs of implementation strategies:

1. Name each implementation strategy and list associated actions, actors and temporality
2. Determine the frequency and average duration of each implementation action by actors and actor's total time spent on each action
3. Determine the price per hour of each actor
4. Determine non-personnel, fixed resources, and their associated expenses
5. Calculate total cost

Implementation costs for nursing homes

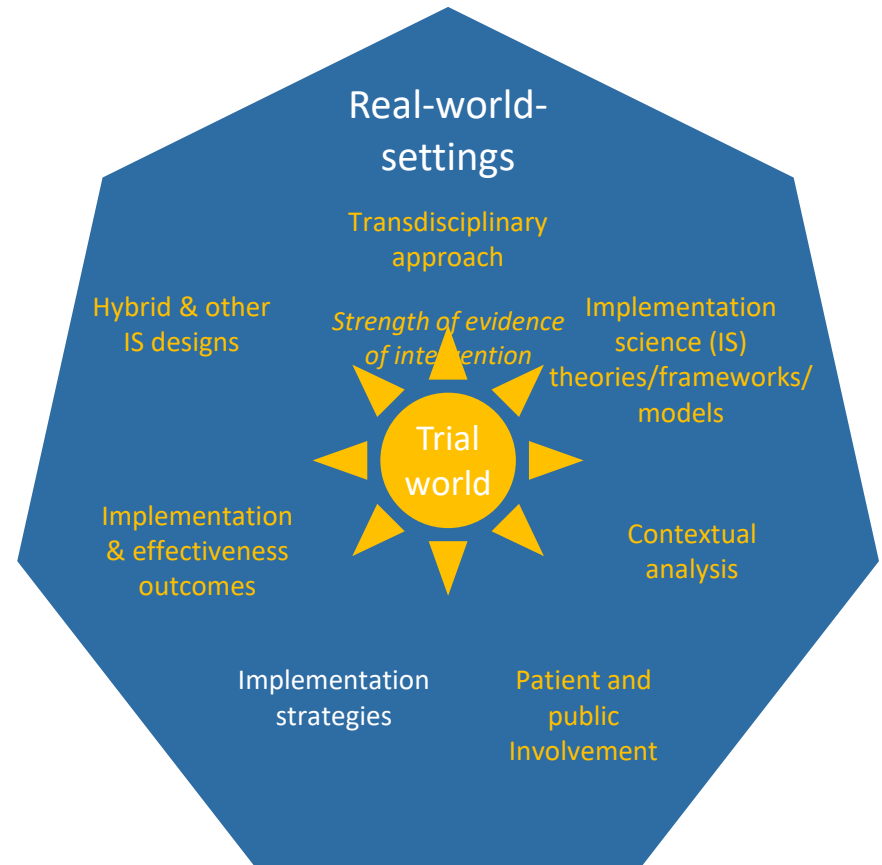


Implementation elements	Time point	Length	Participants	Cost*
Meetings (pre- and implementation period)				
Pre-implementation meetings and meeting event with all NHs	Preparatory period/study period	21 hrs + 16 hrs	NH director, INTERCARE nurse, project manager...	107 CHF
Individual meetings with leadership and INTERCARE nurses	Study period	Varies	NH director, INTERCARE nurse, project manager...	
INTERCARE nurse's phone meetings	Study period	2 hrs / month / person		
Training & Administration				
INTERCARE nurses' training	All phases	390hrs	INTERCARE nurses	143 CHF
Internal trainings/events	All phases	Varies	Internal decision	150 CHF
Administration/internal coordination	All phases	Varies		229 CHF
Non-personnel costs				
Travel costs	All phases		NH director, INTERCARE nurse, project manager...	26 CHF
Material costs	All phases		INTERCARE nurses	20 CHF
Average cost per bed for implementation components*				685 CHF

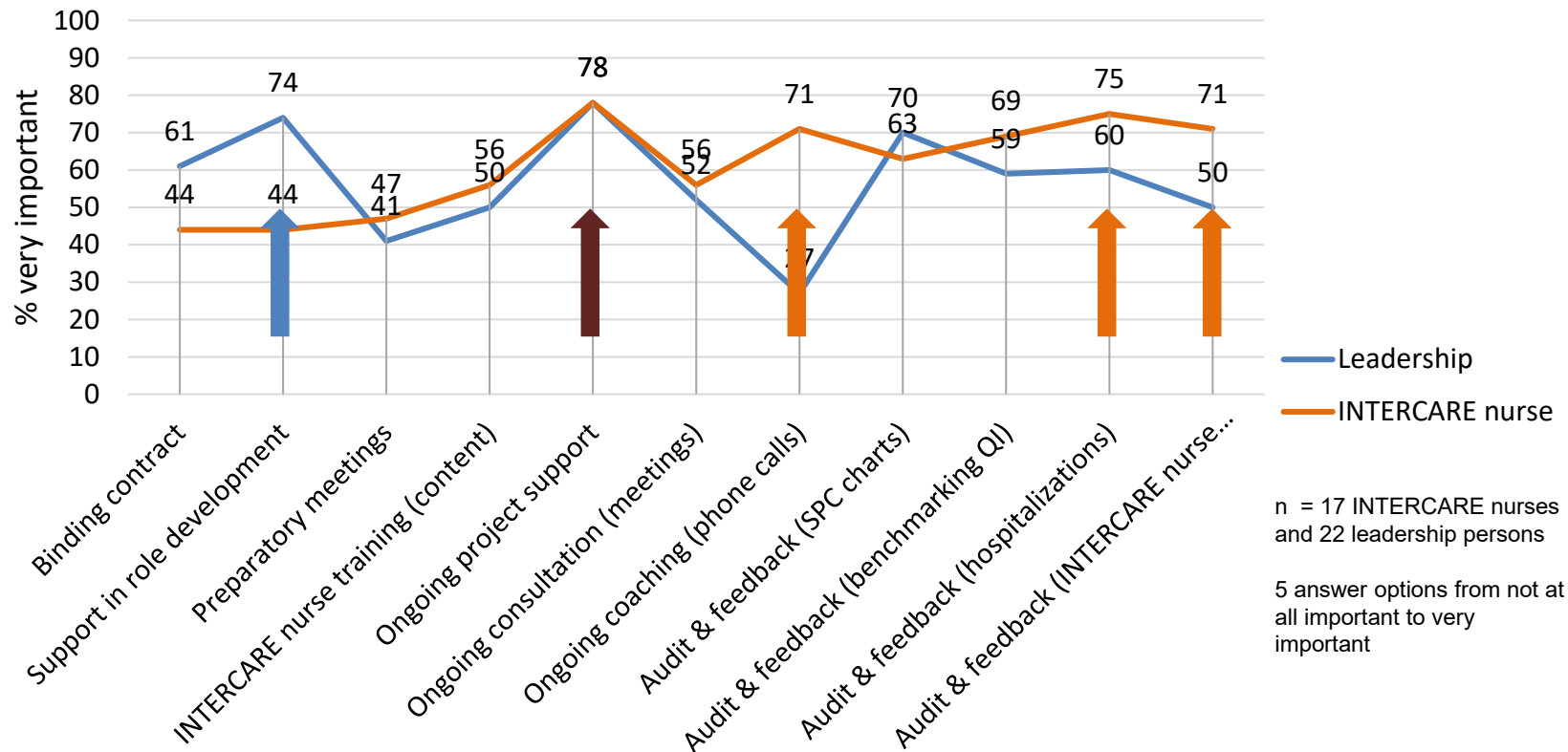
* Average cost per bed, taking into account local wages of participants

The Basel Heptagon of Implementation Science

- The stuff – implementation strategies



Implementation strategies – Perceived importance for successful implementation



Costs of implementation strategies

- Core implementation strategies from the nursing homes' perspective:
 - Ongoing project support, ongoing coaching, support in role development
 - Audit & feedback
- These were the more cost-demanding implementation strategies regarding time investment from the research team
 - INTERCARE succeeded in sustainably introducing a new care model to strengthen geriatric expertise and improving resident outcomes
 - INTERCARE shows potential for cost-effectiveness (trade-off between salary of INTERCARE nurse and less revenues lost with less days residents are away due to hospitalizations)
 - How much consultation and coaching is needed to bring about innovative change? How do we decide about flexibility of dosage depending on context of nursing home?



<https://banknotenews.com/?p=1272>

If you were to scale up INTERCARE, which implementation strategies would you focus on (choose three you consider most important):

- INTERCARE nurse training (conduct ongoing training)
- Ongoing coaching of INTERCARE nurse (ongoing consultation)
- Ongoing project support at leadership level (ongoing consultation)
- Audit & feedback
- Foster exchange among participating nursing homes (capture and share local knowledge)
- Create a learning collaborative among nursing homes
- Identify and prepare champions at unit level
- Shadow other experts (both for leadership and INTERCARE nurses)

So what?

- We need to further **refine, evaluate and scale up care models** that strengthen expertise and we need to support organisations in implementing such models
 - Preparation of INTERSCALE with a hybrid III cluster randomized trial to compare different bundles of implementation strategies regarding their cost-effectiveness
- We need to refine our understanding of **factors influencing quality of care and how to improve the latter within organisations** that implement innovations
 - Explore key roles and their interplay (management, clinical leaders)
 - Examine physician models / models for health care provision in nursing homes

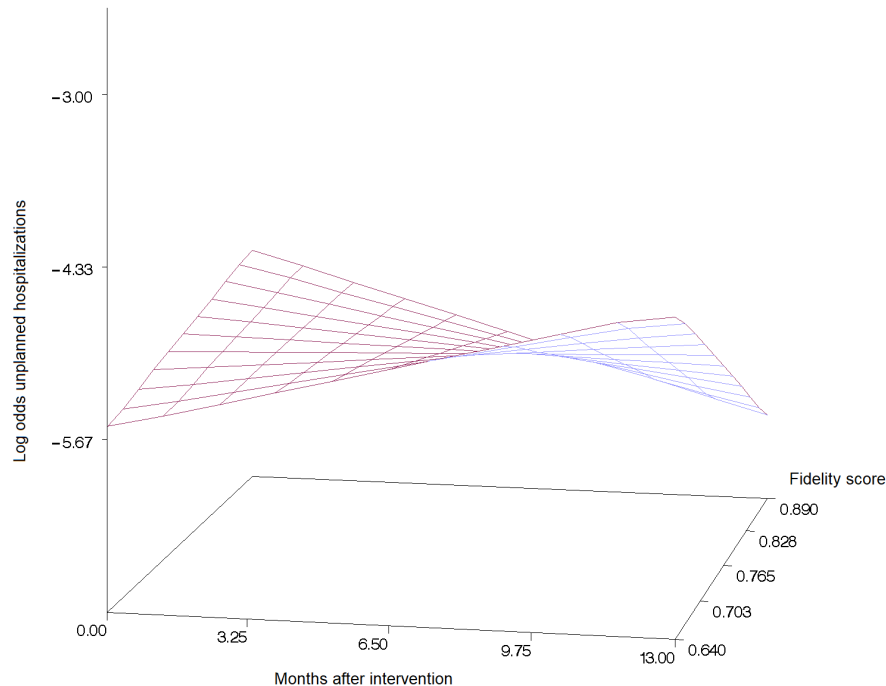
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Linking context analysis and implementation strategies

CFIR	Context analysis	ERIC
Intervention characteristics	Barrier / Facilitator	
Source of intervention	Intervention is more acceptable if it answers a local problem	Identify and prepare champions
Adaptability	High diversity of nursing homes	Promote adaptability
Characteristics of individuals		
Knowledge and beliefs about the intervention	Better acceptance of nurse experts with high clinical and social competence	Conduct ongoing training
Inner Setting		
Culture	Strong hierarchy vs. mutual respect	Identify and prepare champions Assess readiness for change

Implementation outcome – higher overall fidelity scores related to decreased unplanned transfers



Overall fidelity score: measured as percentage of minimal requirements fully implemented over all 6 core elements at baseline, 6 and 12 months after intervention

- Nursing homes with higher fidelity scores show a lowering of the log odds of unplanned hospitalizations over time

The stuff: addressing different levels

Organizational level:

- Assess readiness for change
- Identify barriers and facilitators
- Obtain formal commitments
- Promote adaptability
- Provide local technical assistance

Policy level / public:

- Visit other sites
- Resource sharing agreement
- Conduct local consensus discussions










Both levels:

- Create new clinical teams (incl. champions)
- Provide ongoing consultation
- Capture and share local knowledge
- Develop and distribute educational materials
- Audit and provide feedback

INTERCARE nurse:

- Develop and conduct ongoing training
- Make training dynamic

The stuff: Implementation strategies over time

Before the INTERCARE project started	Development (Phase A)	Implementation and testing (Phase B)	Sustainment
Visit other sites → international and national NH			
Develop partnership with educational institutions			
Conduct local consensus discussion with stakeholders			
	Assess readiness for change		
	Identify barriers and facilitators		
	Formal commitments: → Binding contract with NH		
	Promote adaptability → core and peripheral elements		
	Create new clinical teams → Identify champions (units) → INTERCARE nurse		
	Develop and conduct ongoing training → Blended learning curriculum		
		Audit and provide feedback → Benchmarking, staff questionnaires, hospitalizations	
		Provide local technical assistance: → Study coordinator	
		Provide ongoing consultation: → Meetings and phone calls	
		Capture and share local knowledge	

Evaluation of multilevel implementation strategies

Method: Questionnaire survey among leadership and INTERCARE nurses to evaluate implementation strategies

Participants: 16 INTERCARE nurses and 22 leadership persons

Questions:

- 1. Did the INTERCARE implementation strategies help you to implement INTERCARE?

promoted implementation success	had little perceived effect on implementation success	the effect is unclear
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- 2. How important do you deem a specific implementation strategy?

1	Not at all important
2	Slightly important
3	No opinion
4	Fairly important
5	Very important