



Section 3.5.1

Selecting, tailoring, and implementing knowledge translation interventions

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Chronic Heart Failure

- Major variations in treatment repeatedly found
- Use of beta-blockers in primary care ranged from 10% to 50% between countries
- Use of angiotensin-converting enzyme inhibitors (ACE-I) ranged from 50% to 75%
- Differences in national guideline recommendations not sufficient to explain variation
- Comorbidity explained some variation, but 14% of prescriptions related to patient characteristics, not evidence





Chronic Heart Failure

- Study of barriers to adherence to heart failure guidelines found:
- Physicians found it difficult to change treatment initiated by cardiologist
- Titrating the ACE-I dose was seen as difficult
- Initiating ACE-I in patients already using a diuretic or stable on their current medication was seen as a barrier
- So...how to improve primary care for chronic heart failure and which interventions to select?





Interventions to facilitate uptake of research

- Training for physicians?
- Use of opinion leaders to influence prescribing patterns of cardiologists?
- Providing financial incentives to physicians for each heart failure patient treated according to guideline recommendations?
- Inform the patient and family about appropriate heart failure care?





How to choose an intervention?

- Ideally guided by research evidence on the effectiveness and efficiency of the intervention
- Many KT interventions have not been well-evaluated in rigorous studies
- Available evidence suggests that interventions have variable impact and effect size is moderate
- Current research evidence cannot guide the implementer on the best choice of intervention.
- In addition to “science” we need “art” to choose or design a KT intervention





Professional interventions

- Available evidence focuses mainly on professional interventions (education programs, feedback and reminders)
- Methodological quality is variable but overall is only moderate
- Overall absolute change of professional performance is usually not more than 10%
- Such changes can be clinically or economically relevant





Passive vs active educational interventions

- Passive (written guidelines, lectures and conferences) unlikely to change professional behavior if used alone
- Active (outreach visits and quality circles of professionals) are more likely to induce change
- Active self-study materials or web sites can be effective





Other interventions

- Interventions that bring information close to the point of decision making (reminders, decision support) are likely to be effective
- Patient-directed interventions (preconsultation questionnaires or decision aids) can support quality improvement, but insight into effects on quality of care is limited
- Organizational interventions (revision of professional roles and multidisciplinary teams) can influence clinical outcomes and efficiency - impact on KT is unclear, but improve efficiency and patient satisfaction
- Financial interventions influence volumes of health care use – effect on appropriateness of clinical decisions and practice patterns is unclear





Art of selecting a KT intervention

- Use structured approach to address professionals, patients, teams, organizations and wider systems
- Can include intervention mapping, marketing, proceed/proceed, quality cycle, change management, organizational development, community development, and health technology assessment
- Unclear whether structured approaches result in better knowledge uptake
- Planning models for change propose more or less the same steps or stages, but vary in number





What are the objectives for KT?

- Objectives should be related to outcomes for patients, populations, and society
- Many KT objectives have been defined in terms of specific changes in treatments or other aspects of health care delivery
- Expectation is that changes result in better outcomes
- Often strong research evidence to support this expectation is not available
- Several methods can be used to select objectives, such as a Delphi procedure (Linestone & Turoff 1975)





What are the indicators that can be used to measure implementation?

- Objectives needs to be defined in terms of specific indicators used to measure degree of implementation
- Indicators should have good measurement properties (support from key stakeholders and high feasibility in use)
- Current best practice is a structured Delphi procedure with panels of stakeholders who review available evidence, followed by a test in real practice
- Research of practice variation and quality assessment (chart audits, patient surveys, video observations, and secondary analysis of routine data)





What are potential barriers to change?

- Should analyze barriers to change for each chosen objective:
- Barriers for change as reported by professionals, patients and others – interviews, questionnaires and group methods
- Variation in health care delivery across patients – large observational datasets and statistical methods
- Determinants of effectiveness of KT interventions – longitudinal datasets and advanced quantitative methods





How can we link KT interventions to these barriers?

- Once objectives have been chosen and barriers identified, next step is to link specific KT interventions to the barriers
- Most creative step in the design of KT programs
- Both exploratory and theory-inspired methods can be used
- Exploratory methods try to avoid implicit assumptions – advocate using an “open mind” – often use group brainstorming to identify solutions (live or electronic using Internet platforms)
- Theory used to understand the factors that determine practice variation and change – decision can be taken in a group as well
- Next slides link KT interventions to a number of theory-based factors





Cognitive factors – Information behavior

Objective/target	Information behavior
Barriers for change	Learning style, learning conceptions, innovation adoption behavior, use of communication channels
Theory	Cognitive theory on learning*
KT interventions (examples)	Use various information delivery methods or adapt to individual needs

*Norman 2002



Cognitive factors – Domain knowledge

Objective/target	Domain Knowledge
Barriers for change	Domain knowledge, professional knowledge, complexity of the innovation, intelligence, cognitive competences
Theory	Cognitive theory on learning*
KT interventions (examples)	Change the mix of professional skills in the organization

*Norman 2002



Motivational factors – Motivation

Objective/target	Motivation
Barriers for change	Intention goal setting, stages of change, persuasion
Theory	Theory on motivation for learning* Theory on stages of change+ Theory on adopter characteristics§
KT interventions (examples)	Provide information, social influence, action planning according to needs

*Newman & Peile 2002
+Prochaska & Velicer 1997
§Rogers 1995



Motivational factors – Beliefs about consequences

Objective/target	Beliefs about consequences
Barriers for change	Outcome expectancies, attributions of behavior, impact, centrality, duration of the innovation
Theory	Social cognitive theory* Theory on innovation characteristics+
KT interventions (examples)	Provide education and feedback, adapt the innovation to improve consequences

*Bandura 1986
+Rogers 1995



Motivational factors – Attitudes

Objective/target	Attitudes
Barriers for change	Attitudes, utilities, advantage, costs, risks of the innovation
Theory	Theory of planned behavior*
KT interventions (examples)	Provide education on consequences

*Ajzen 1991



Motivational factors – Perceived subjective norms

Objective/target	Perceived subjective norms
Barriers for change	Perceptions of other behavior, social, professional role, compatibility, visibility of the innovation, social comparison
Theory	Theory of planned behavior*
KT interventions (examples)	Organize social influence

*Ajzen 1991



Motivational factors – Beliefs about capabilities

Objective/target	Beliefs about capabilities
Barriers for change	Perceived behavioral control, self-confidence
Theory	Social cognitive theory* Theory of planned behavior+
KT interventions (examples)	Provide skills training

*Bandura 1986
+Ajzen 1991



Motivational factors – Emotion

Objective/target	Emotion
Barriers for change	Satisfaction with performance, attractiveness of the innovation
Theory	Theory on motivation for learning*
KT interventions (examples)	Provide feedback; provide education and counseling to change individual standards

*Newman & Peile 2002



Behavioral factors – Behavioral regulation

Objective/target	Behavioral regulation
Barriers for change	Coping behaviors, observational learning, central/peripheral route
Theory	Social cognitive theory* Coping theory+
KT interventions (examples)	Provide feedback and reminders to enable self-regulation; provide education and counseling to change individual standards

*Bandura 1986

+Lazarus & Folkman 1984



Behavioral factors – Skills

Objective/target	Skills
Barriers for change	Competence, behavioral capability, flexibility, divisibility, triability of the innovation
Theory	Cognitive theory on learning*
KT interventions (examples)	Provide education to improve competency; use decision support systems

*Norman 2002



Interaction in professional teams – Team cognitions

Objective/target	Team cognitions
Barriers for change	Objectives, group vision, task orientation, group norms
Theory	Theory on team effectiveness* Theory on group decisions+
KT interventions (examples)	Change team members or decision processes

*De Dreu & Weingart 2003
+Turner & Pratkanis 1998





Interaction in professional teams – Team processes

Objective/target	Team processes
Barriers for change	Group composition, participation safety
Theory	Theory on team effectiveness* Theory on group decisions+
KT interventions (examples)	Training to change group processes

*De Dreu, Weingart 2003
+Turner & Pratkanis 1998





Structure of professional networks – Leadership and key individuals

Objective/target	Leadership and key individuals
Barriers for change	Change agents, opinion leaders, source of the message
Theory	Theory on persuasion* Theory on leadership+
KT interventions (examples)	Identify and involve formal and informal leaders

*Petty, Wegener & Fabrigar 1997
+Yukl 1998



Structure of professional networks – Social network characteristics

Objective/target	Social network characteristics
Barriers for change	Range, density, multiplexity, weak ties, etc.
Theory	Social support theory* Theory on social comparison+ Theory on diffusion of innovations§
KT interventions (examples)	Involve change agents to transfer information; develop networks to create more “weak” linkages

*Hogan, Linden & Najarian 2002
+Suls, Martin & Wheeler 2002
§Rogers 1995





Organizational structures – Specifications

Objective/target	Specification
Barriers for change	Clinical protocols, benchmarking, systems perspective
Theory	Disease management systems* Theory on organizational innovativeness+
KT interventions (examples)	Implement integrated care systems, e.g. chronic care model

*Hunter 2000

+Damanpour 1991





Organizational structures – Flexibility

Objective/target	Flexibility
Barriers for change	Flexible delivery system, minimum specification, formalization, fragmentation, operational variety
Theory	Complex adaptive systems* Theory on organizational innovativeness+
KT interventions (examples)	Redesign specific services in the organization

*Plesk & Greenhalgh 2001
+Damanpour 1991



Organizational structures – Leadership structure

Objective/target	Leadership structure
Barriers for change	Constancy of purpose, management in different stages, centralization, management attitudes/tenure, administrative intensity
Theory	Theory on quality management* Theory on organizational innovativeness+
KT interventions (examples)	Recruit and train to have specific types of leaders

*Prajogo & Sohal 2001
+Damanpour 1991



Organizational structures – Specialization

Objective/target	Specialization
Barriers for change	Differentiation, professionalism
Theory	Theory on organizational innovativeness*
KT interventions (examples)	Change the mix of professional skills in the organization

*Damanpour 1991





Organizational processes – Continuous improvement

Objective/target	Continuous improvement
Barriers for change	Training of professionals, talent-developing programs, process mindedness, continuous education, concern for measurement, experimental mindset
Theory	Theory on quality management* Theory on organizational learning+
KT interventions (examples)	Create teams for improvement

*Prajogo & Sohal 2001
+Senge 1990



Organizational processes – External communication

Objective/target	External communication
Barriers for change	Customer mindedness, reactivity, scanning imperative, complexity, external influence, suppliers as partners
Theory	Theory on quality management* Theory on organizational innovativeness+
KT interventions (examples)	Undertake patient satisfaction activities

*Prajogo & Sohal 2001
+Damanpour 1991



Organizational processes – Internal communication

Objective/target	Internal communication
Barriers for change	Climate of openness, generative relationships, involvement of nonmedical professionals, employee mindedness, cooperation focus, multiple advocates, ownership, cultural diversity, involvement of target group
Theory	Theory on quality management* Theory on organizational innovativeness+ Theory on organizational learnings§ Theory on knowledge management† Theory on organizational culture‡
KT interventions (examples)	Undertake care provide satisfaction activities; use ICT for transfer of information

*Prajogo & Sohal 2001

+Damanpour 1991

§Senge 1990

†Garavelli, Gorgoglione & Scozzi 2002

‡Scott, Mannion, Davies & Marshall 2003



Organizational resources – Technical knowledge

Objective/target	Technical knowledge
Barriers for change	Competence base, organizational intelligence, creativity, knowledge information systems
Theory	Theory on organizational innovativeness*
KT interventions (examples)	Change the mix of professional skills in the organization

*Damanpour 1991





Organizational structures – Organizational size

Objective/target	Organizational size
Barriers for change	Size of teams
Theory	Theory on organizational innovativeness*
KT interventions (examples)	Merge/split organizations or departments

*Damanpour 1991



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Societal factors – Professional development

Objective/target	Professional development
Barriers for change	Education and legal protection related to body of knowledge
Theory	Theory on professional development*
KT interventions (examples)	Revise professional roles

*Freidson 1970



Societal factors – Priority on societal agenda

Objective/target	Priority on societal agenda
Barriers for change	Public relations, political action
Theory	Theory on agenda building*
KT interventions (examples)	Undertake activities to influence policymakers

*Walter, Walters & Gray 1996

Financial incentives – Positive incentives

Objective/target	Positive incentives
Barriers for change	Rewards, simple attractors, resources, structures for rewards, slack resources, support for innovation, provider utility function
Theory	Theory on financial reimbursement*
KT interventions (examples)	Change the provider reimbursement and patient copayment

*Sonnad & Foreman 1997



Financial incentives – Provider and patient financial risk sharing

Objective/target	Provider and patient financial risk sharing
Barriers for change	Budgets, capitation, etc., supplier induced demand
Theory	Theory on financial reimbursement*
KT interventions (examples)	Change the provider reimbursement and patient copayment

*Sonnad & Foreman 1997

Financial incentives – Transaction costs

Objective/target	Transaction costs
Barriers for change	Cost improvement, switching costs related to innovation
Theory	Theory on contracting*
KT interventions (examples)	Change the financial system for health care

*Chalkley & Malcomson 1998



Financial incentives – Competition intensity

Objective/target	Competition intensity
Barriers for change	Maturity of the market
Theory	Theory on competition and innovation*
KT interventions (examples)	Introduce market characteristics, such as financial risk and improved information for users

*Funk 2002





What factors should we consider when deciding to use a single or multicomponent KT intervention?

- Early research suggested that multicomponent interventions for KT are most effective (addressed a larger number of barriers for change)
- Later research raised doubts about this...
- Not clear what constitutes a “single intervention”
- Is an outreach visit that includes instruction, motivation, planning of improvement, and practical help a “single intervention”?
- Is an intervention that combines different types of professional education (e.g., lectures, materials, and workshops) that all address lack of knowledge a “multicomponent intervention”?
- Multicomponent interventions could be more effective if they address different types of barriers for change
- The efficiency, feasibility and sustainability of multicomponent interventions needs to be evaluated





Future research (1)

- How comprehensive and systematic does an analysis of determinants of change have to be?
- What is the added value of tailoring KT interventions?
- How should design KT programs be designed?
- What is the link between barriers for change and choice of KT interventions?
- How to best define testable hypotheses in unique and complex KT programs addressing multiple issues and stakeholders?





Future research (2)

- How can the impact of KT interventions be sustained?
- How effective and efficient are systematic KT interventions development compared to pragmatic, simple methods for choosing interventions?
- How are different stakeholders best involved in KT intervention development?
- Continued research on the determinants of improvement in health care would also help guide the choice of KT interventions





Summary

- Choice of KT interventions remains an “art” informed by science
- Practice-based experience and creativity are important in selecting KT interventions
- Use a stepwise approach and structured methods helps take a comprehensive and balanced approach
- Research evidence on KT interventions can provide guidance, if only to show which interventions should be avoided

