COPRH Con
Colorado Pragmatic Research in Health Conference

Principles, Methods, and Systems for Designing for Dissemination, Sustainability, and Equity

Bethany M. Kwan, PhD, MPSH

Associate Professor and Associate Vice Chair for Research, Department of Emergency Medicine

University of Colorado School of Medicine

Adult & Child Center for Outcomes Research & Delivery Science (ACCORDS)

Learning Objectives

Upon completion of this session, participants will be able to:

1. Describe the principles of Designing for Dissemination, Sustainability, and Equity (D4DSE): beginning with the end in mind, ensuring innovation-context fit, and planning for active dissemination
2. Identify frameworks and methods useful for designing and disseminating a range of research products from a D4DSE perspective
3. Describe the phases of the Fit to Context Framework for D4DSE

COPRH Con
Colorado Pragmatic Research in Health Conference

Barriers to Dissemination and Sustainability

Poor fit between health innovations and intended context for use

Research paradigms used to develop and test programs

Cultures and systems that fail to incentivize and support active dissemination and translation of evidence into practice

COPRH Con
Colorado Pragmatic Research in Health Conference

Designing for Dissemination and Sustainability (D4DS)

- Principles and methods for:
  - Enhancing the fit between a health program, policy, or practice and the context in which it is intended to be adopted
  - Early and active dissemination and sustainability planning.
- Designing for dissemination
  - the process of ensuring that the products of research are developed to match the contextual characteristics of the target audience and setting for intended use
- Designing for sustainability
  - early planning and design processes designed to increase the likelihood of sustainment of an evidence-based program or practice after initial implementation

Designing for Dissemination and Sustainability to Promote Equitable Impacts on Health
Bethany M. Kwan, Ross C. Brownson, Russell E. Glasgow, Elaine H. Morrato, Douglas A. Luke
Annual Review of Public Health 2022 43:1, 331-353

COPRH Con
Colorado Pragmatic Research in Health Conference

Designing for *Equity*

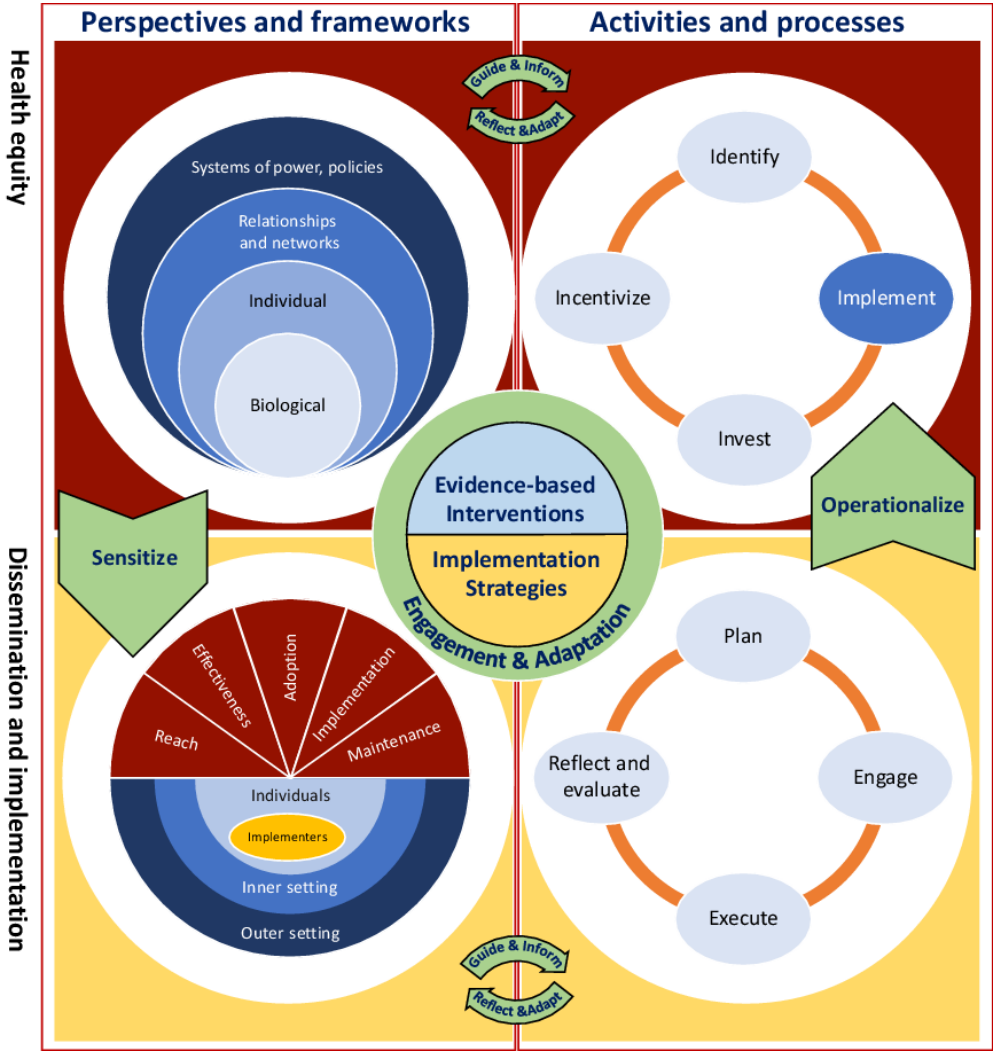


Fig. 2. Extended representation of EQ-DI framework of the interaction between health equity and D&I.

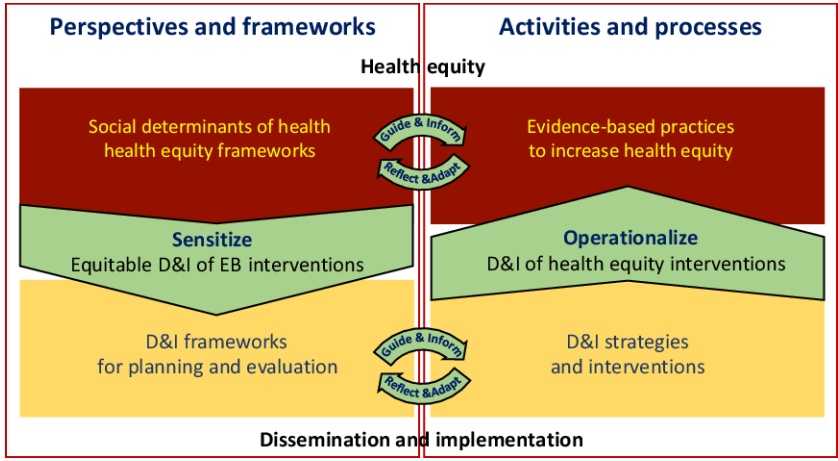


Fig. 1.EQ-DI framework on the interaction between health equity and D&I.

Yousefi Nooraie, R., Kwan, B., Cohn, E., AuYoung, M., Clarke Roberts, M., Adsul, P., & Shelton, R. (2020). Advancing health equity through CTSA programs: Opportunities for interaction between health equity, dissemination and implementation, and translational science. *Journal of Clinical and Translational Science, 4*(3), 168-175. doi:10.1017/cts.2020.10

COPRH Con
Colorado Pragmatic Research in Health Conference

The Products of Research: “Innovations”

Evidence

- The generalizable knowledge resulting from the conduct of research and evaluation

Programs, Treatments, Interventions, and Services

- Health promotion and/or disease prevention or educational programs, interventions, initiatives, treatments, or services

Technology and Infrastructure

- Devices, software, hardware, web-based and other tools and equipment for disease prevention or management, research, evaluation, or educational purposes

Dissemination and Implementation Strategies

- Methods, approaches, guides, or materials, for dissemination, implementation, and sustainment of effective, equitable, and efficient public health and health care practices in real world settings

Policy and Guidelines

- Local and/or national public health and health care guidelines, standards, and policies emerging from the evidence base

Methods

- Research and evaluation techniques, instruments, tools, models, measures and/or equipment

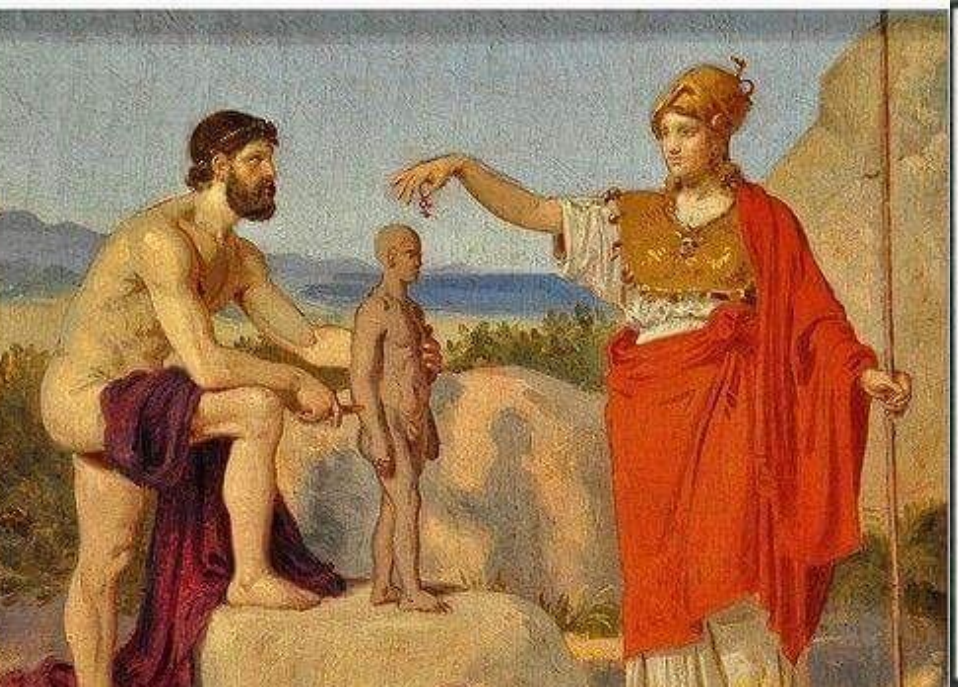
What is being designed for dissemination, sustainability, and equity?

COPRH Con
Colorado Pragmatic Research in Health Conference

Principles of D4DS

- Beginning with the end in mind
- Ensuring innovation-context fit
- Planning for active dissemination and sustainment

COPRH Con
Colorado Pragmatic Research in Health Conference



Beginning with the end in mind

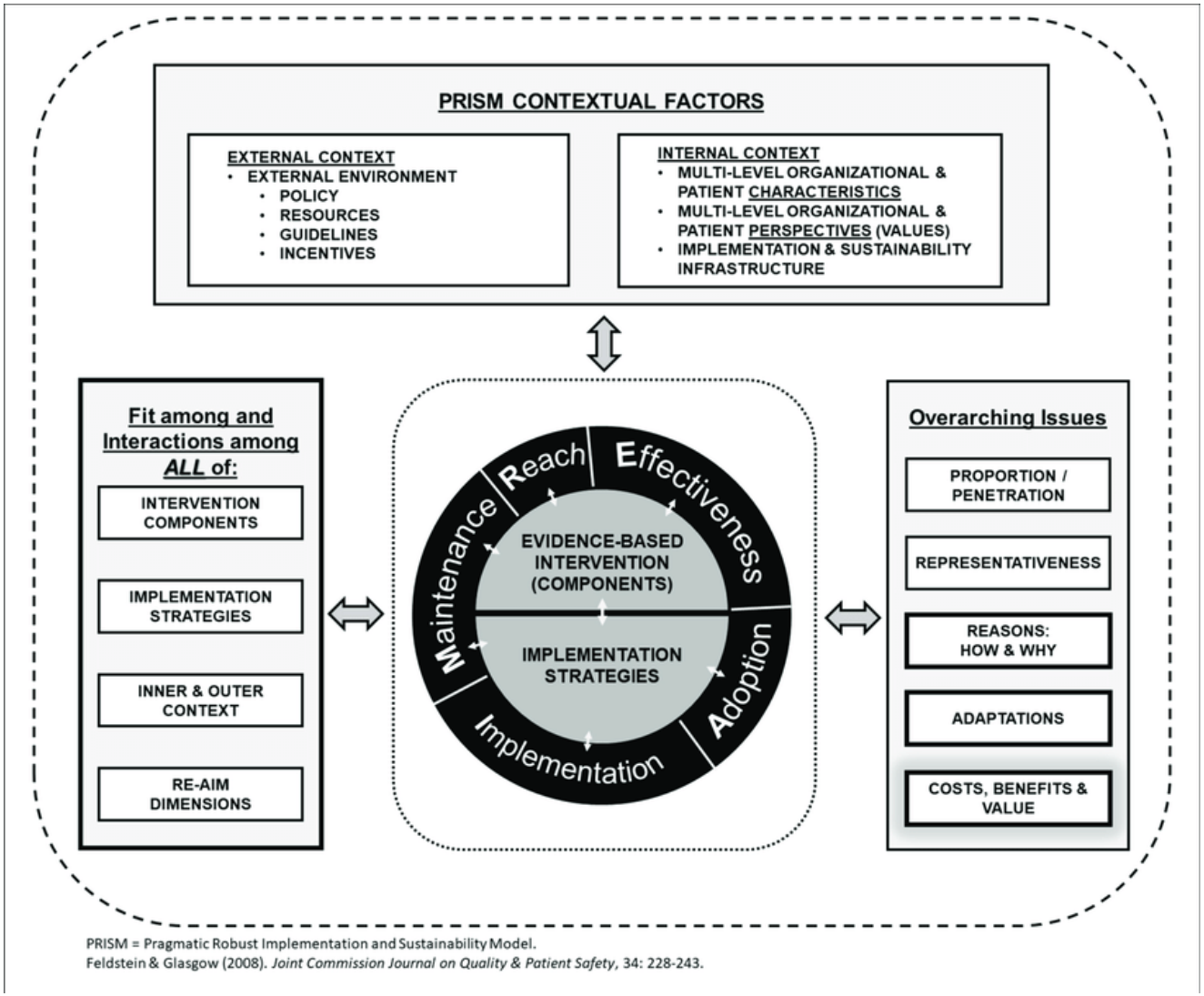
COPRH Con
Colorado Pragmatic Research in Health Conference

Target Audience and Desired Impact

- Adopters
- Influencers
- Saboteurs

COPRH Con
Colorado Pragmatic Research in Health Conference

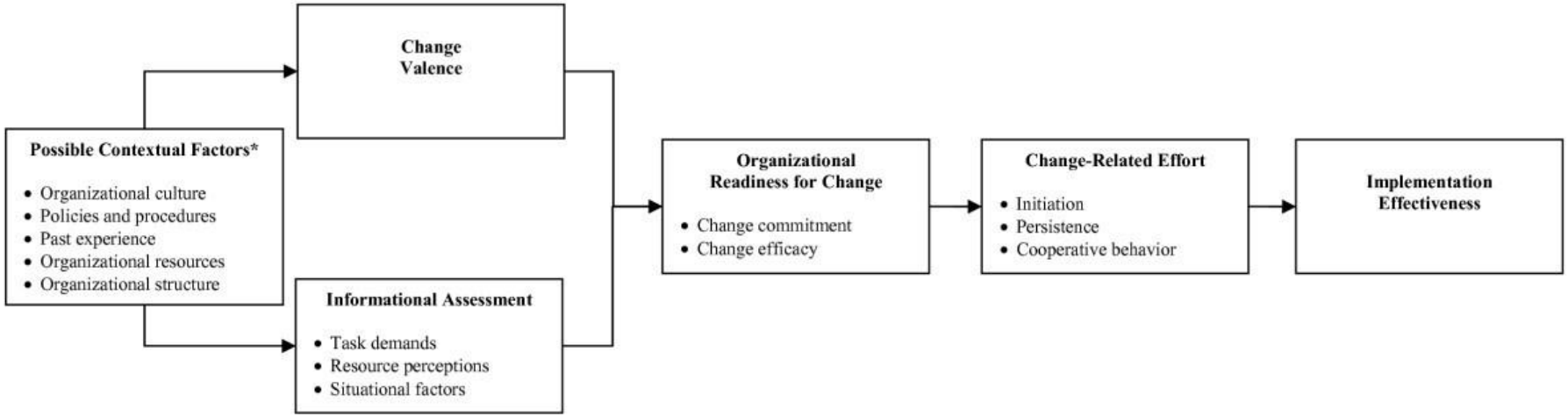
Ensuring Innovation-Context Fit



PRISM = Pragmatic Robust Implementation and Sustainability Model.
Feldstein & Glasgow (2008). *Joint Commission Journal on Quality & Patient Safety*, 34: 228-243.

COPRH Con
Colorado Pragmatic Research in Health Conference

Innovation-Context Fit: System Capacity and Organizational Readiness



* Briefly mentioned in text, but not focus of the theory

Implementation Science

BioMed Central

Debate

Open Access

A theory of organizational readiness for change

Bryan J Weiner

Address: Department of Health Policy and Management, Gillings School of Global Public Health, University of North Carolina Chapel Hill, Chapel Hill, North Carolina, USA

Email: Bryan J Weiner - bryan_weiner@unc.edu

Published: 19 October 2009

Implementation Science 2009, **4**:67 doi:10.1186/1748-5908-4-67

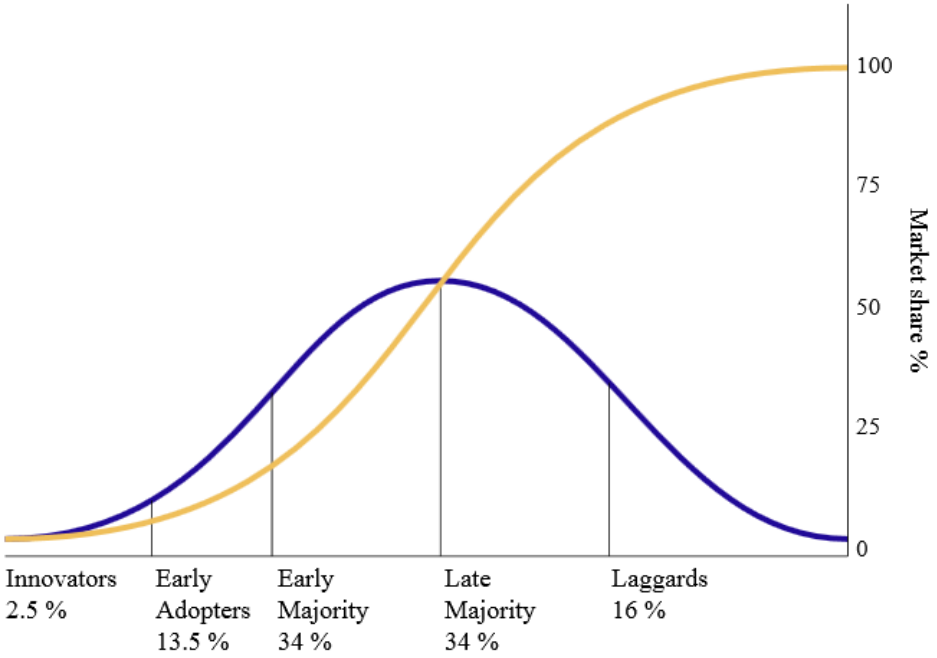
Received: 20 March 2009
Accepted: 19 October 2009

This article is available from: http://www.implementationscience.com/content/4/1/67

COPRH Con
Colorado Pragmatic Research in Health Conference

Dissemination

An active approach of spreading evidence-based interventions to the target audience via determined channels using planned strategies



Diffusion curve

Planning for Active Dissemination: Six-Step Dissemination Framework

1. Describe the innovation, rationale, and evidence base
2. Identify the target audience and the sequence, timing, and format for dissemination
3. Select the communication channels
4. Determine the role of key policymakers and partnerships
5. Identify the barriers and facilitators for dissemination
6. Research and evaluate the dissemination process.

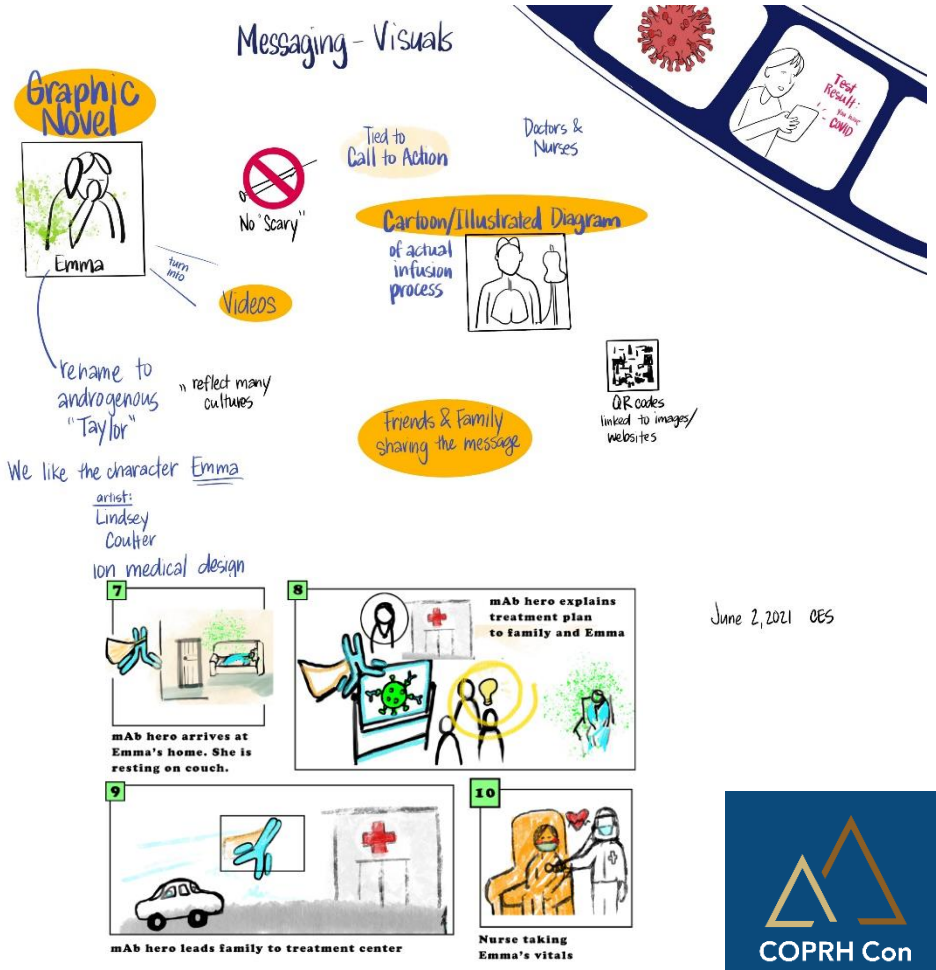
Bauman AE, Nelson DE, Pratt M, Matsudo V, Schoeppe S. Dissemination of physical activity evidence, programs, policies, and surveillance in the international public health arena. American journal of preventive medicine. 2006 Oct 1;31(4):57-65.

Messaging and Packaging

mAb Colorado

Credit: Lynn Noonan, Graphic Designer

Credit: Kris Wittman, live illustrator

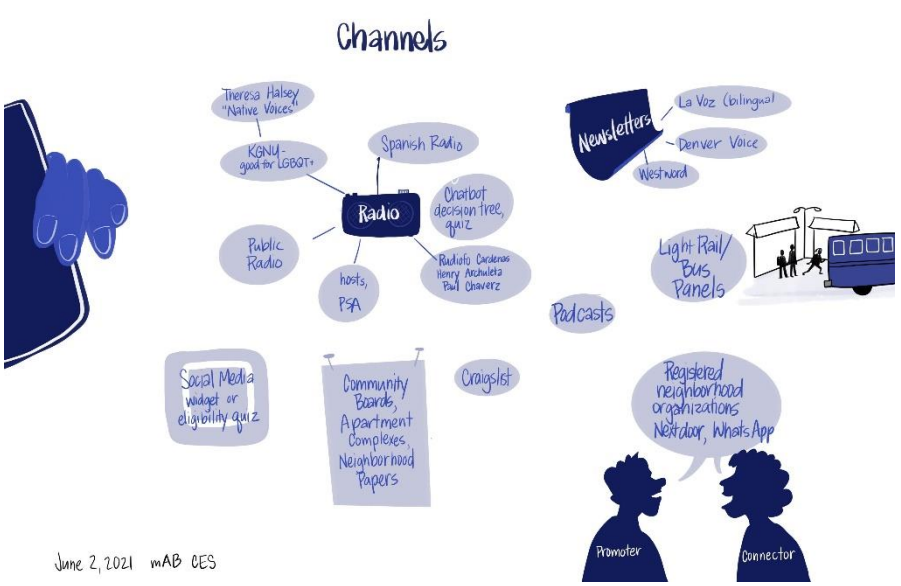


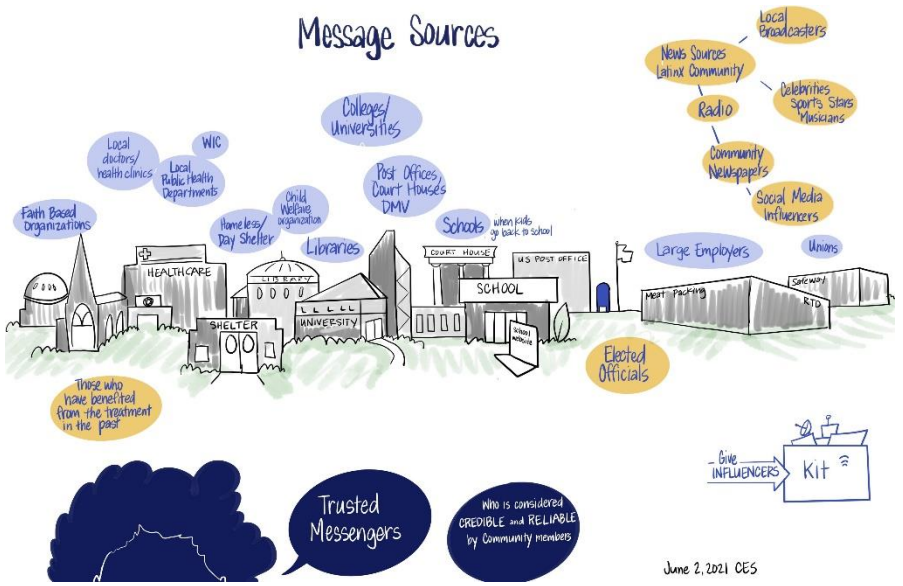
Credit: Dr. Jenna Reno and Jenn Jones, communication scientists

Credit: Lindsay Coulter, ION Medical Designs

COPRH Con
Colorado Pragmatic Research in Health Conference

Distribution through Trusted Sources and Channels





COPRH Con
Colorado Pragmatic Research in Health Conference

Design Processes

- Participatory co-design and stakeholder involvement
- Application of D&I theories and frameworks
- Marketing and Business approaches
- Context and Situation analysis
- Systems, Engineering and Complexity Science approaches
- Communication and the Arts

The methods, frameworks or approaches used to develop and test the research product; product messages, packaging, and distribution plans; and sustainability plans

Kwan BM, Brownson RC, Glasgow RE, Morrato EH, Luke DA. Designing for Dissemination and Sustainability to Promote Equitable Impacts on Health. Annual Review of Public Health. 2022 Jan 4;43.

COPRH Con
Colorado Pragmatic Research in Health Conference

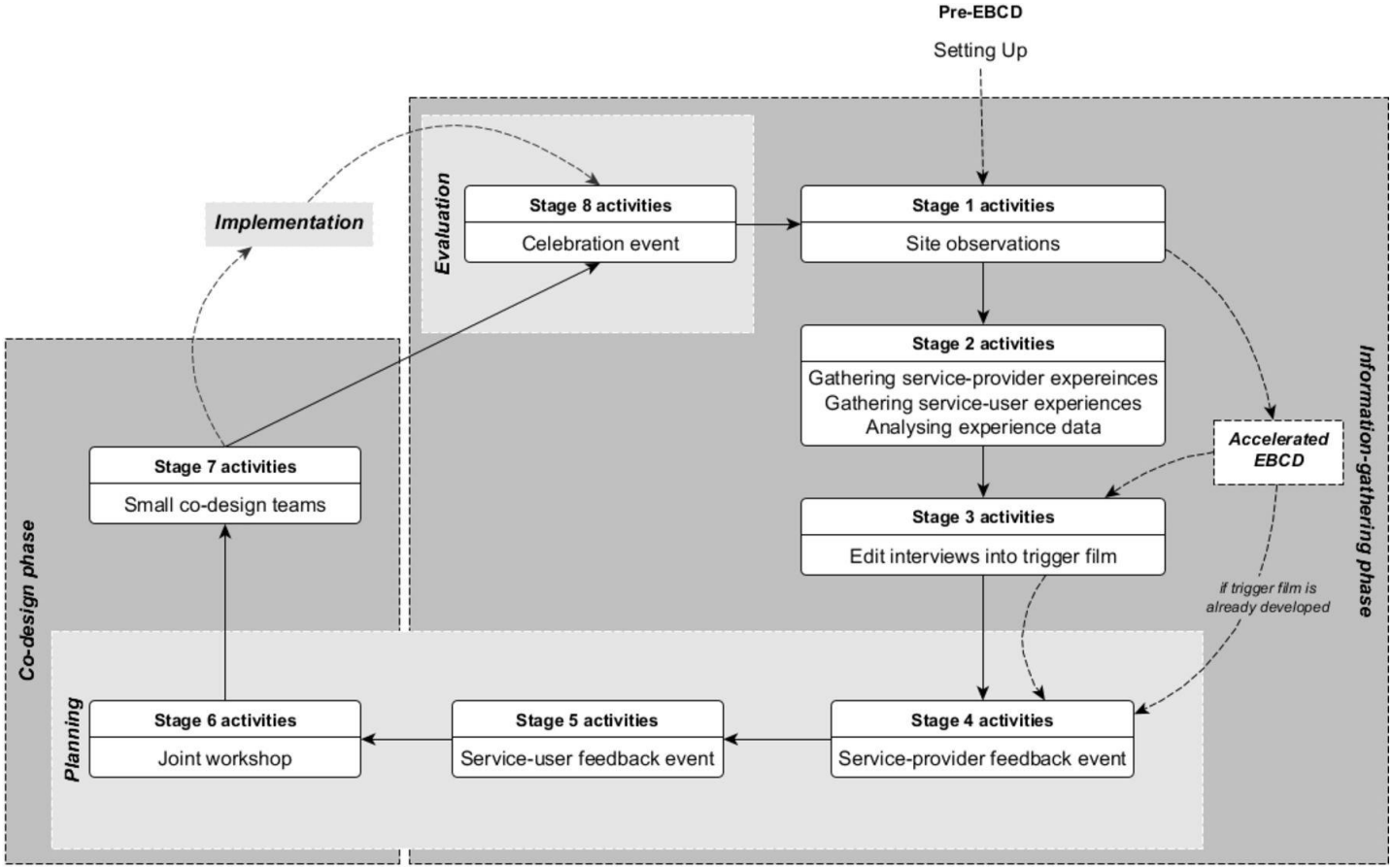
7Ps Framework for Stakeholder* Engagement

- Patients and the public
- Providers
- Policymakers
- Purchasers
- Payers
- Product makers
- Principal investigators

Concannon TW, Meissner P, Grunbaum JA, McElwee N, Guise JM, Santa J, Conway PH, Daudelin D, Morrato EH, Leslie LK. A new taxonomy for stakeholder engagement in patient-centered outcomes research. J Gen Intern Med. 2012 Aug;27(8):985-91. doi: 10.1007/s11606-012-2037-1. Epub 2012 Apr 13. PMID: 22528615; PMCID: PMC3403141.

COPRH Con
Colorado Pragmatic Research in Health Conference

Co-design



Green T, Bonner A, Teleni L, *et al* Use and reporting of experience-based codesign studies in the healthcare setting: a systematic review

BMJ Quality & Safety 2020;**29**:64-76.

COPRH Con
Colorado Pragmatic Research in Health Conference

Using Design Thinking Methods to Create a Stakeholder Engagement Method Navigator Webtool for Clinical and Translational Science

Data Science to Patient Value (D2V)
UNIVERSITY OF COLORADO
ANSCHUTZ MEDICAL CAMPUS

Purpose: The Stakeholder Engagement Navigator is an interactive webtool designed for use by researchers. It was created to help researchers choose engagement strategies while considering budget, timeline, stakeholder availability, and team expertise.

EMPATHIZE

- Review literature
- Conduct environmental scan
- Coordinate consults
- Host workshops
- Conduct ethnography

Stage 1

DEFINE

- Clarify core needs and problems
- Conduct method review and classification
- Determine user perspectives on classification

Stage 2

IDEATE

- Develop educational content
- Prioritize webtool features
- Storyboard website

Stage 3

PROTOTYPE & TEST

- Develop prototype
- Start user testing
- Begin web development
- Conduct Think Aloud testing
- Incorporate feedback

Stage 4

DICEmethods.org

Scan me!

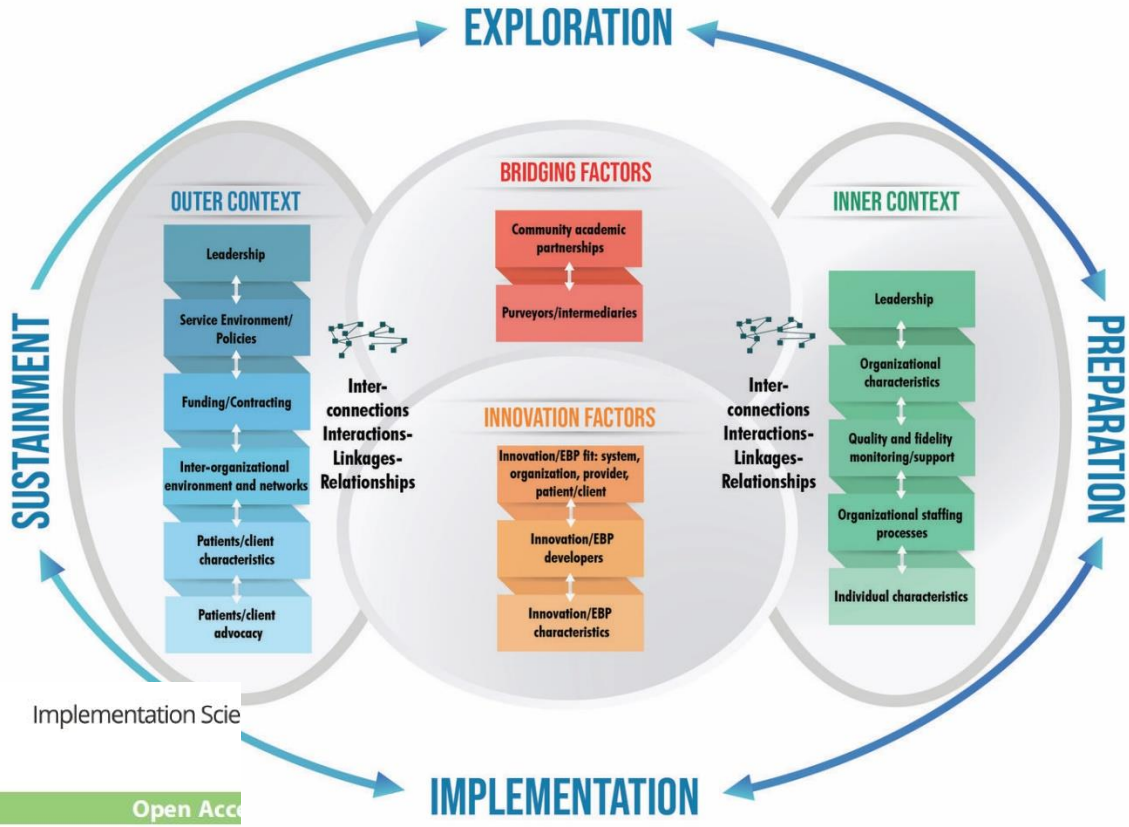
Kwan, B. M., Ytell, K., Coors, M., DeCamp, M., Morse, B., Ressalam, J., Reno, J. E., Himber, M., Maertens, J., Wearner, R., Gordon, K., & Wynia, M. K. A stakeholder engagement method navigator webtool for clinical and translational science. J Clin Transl Sci. 2021;5(1):e180. Published 2021 Sep 13. doi:10.1017/cts.2021.850

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8596067/

@BethanyKwan
@MatthewWynia

COPRH Con
Colorado Pragmatic Research in Health Conference

Application of Dissemination and Implementation Science Process Frameworks



Moullin *et al. Implementation Science* (2019) 14:1
https://doi.org/10.1186/s13012-018-0842-6

Implementation Scie

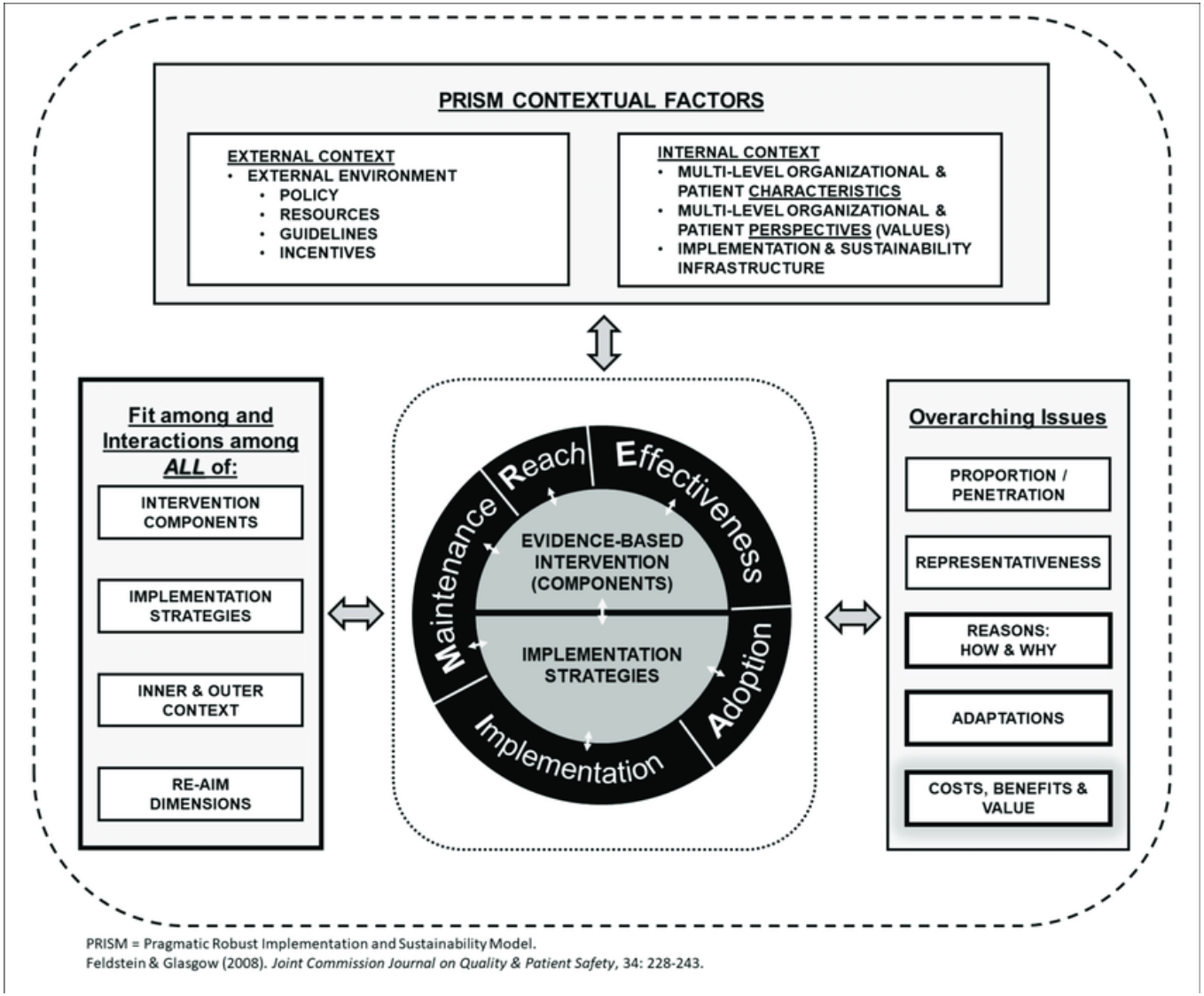
SYSTEMATIC REVIEW Open Acc

Systematic review of the Exploration, Preparation, Implementation, Sustainment (EPIS) framework

Joanna C. Moullin[1,2], Kelsey S. Dickson[2,3], Nicole A. Stadnick[2,4], Borsika Rabin[5] and Gregory A. Aarons[2,4*]

COPRH Con
Colorado Pragmatic Research in Health Conference

Application of D&I Context, Determinants, and Evaluation Frameworks

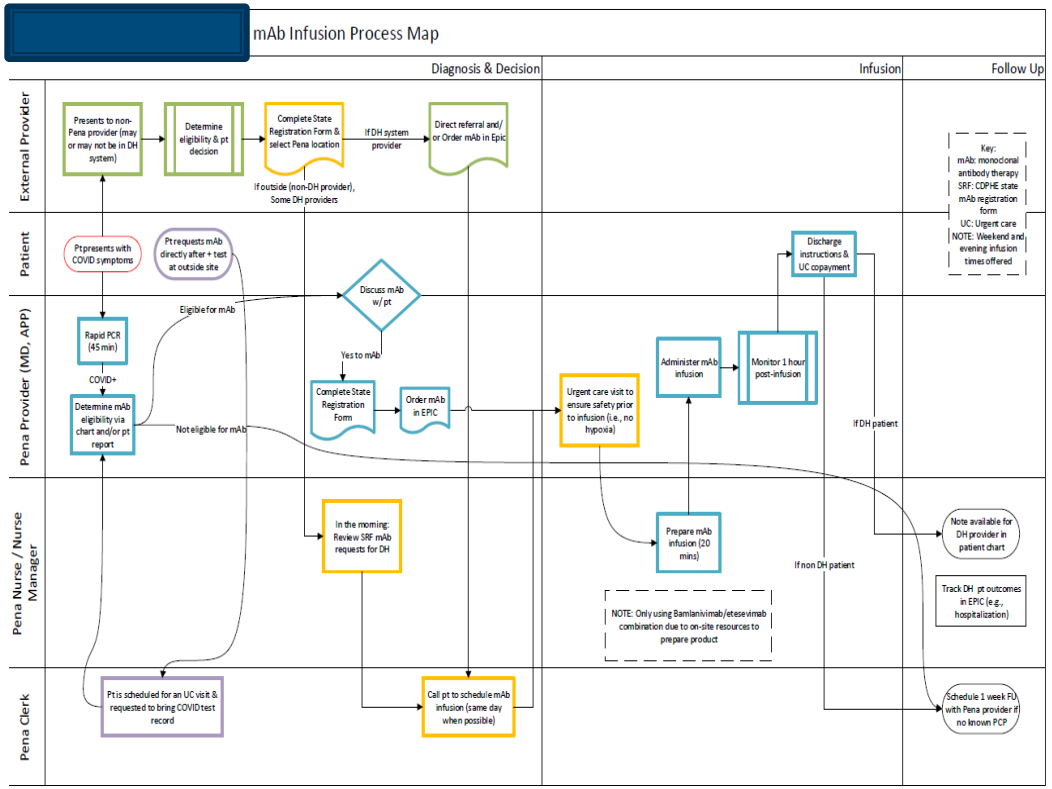


PRISM = Pragmatic Robust Implementation and Sustainability Model.
Feldstein & Glasgow (2008). *Joint Commission Journal on Quality & Patient Safety*, 34: 228-243.

COPRH Con
Colorado Pragmatic Research in Health Conference

Context and Situation Analysis

A formal assessment of the audience, needs, setting, workflows, processes, policies, resources, and systems in which a health innovation is intended to be used.

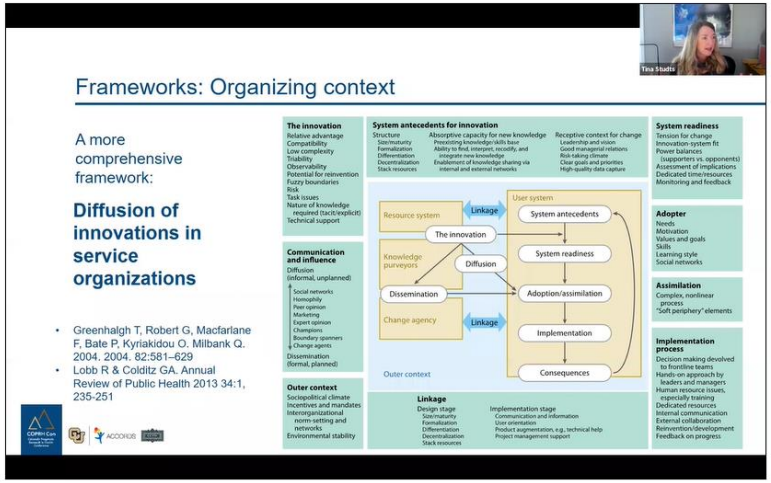


Credit: Mika Hamer

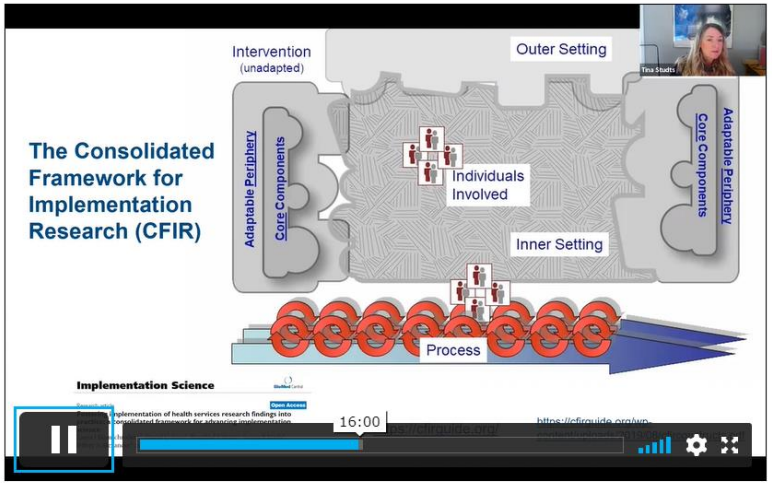
COPRH Con
Colorado Pragmatic Research in Health Conference

Assessing Context

- https://vimeo.com/555249057/0ba549be69
- Dr. Christina Studts. Univ of Colorado Anschutz Medical Campus



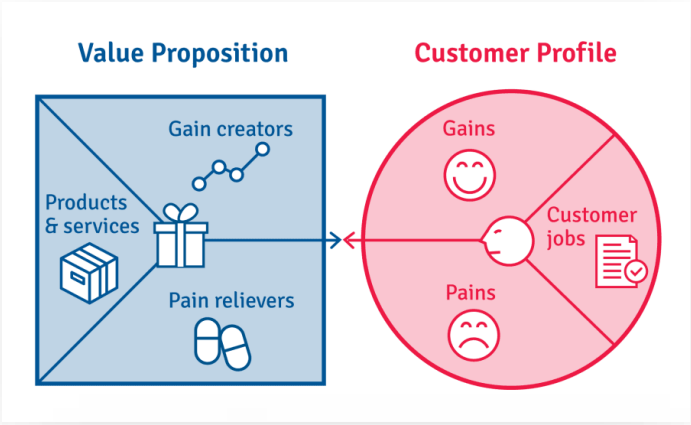
COPRH Con 2021 | Identifying Multilevel Contextual Factors



COPRH Con 2021 | Identifying Multilevel Contextual Factors

COPRH Con
Colorado Pragmatic Research in Health Conference

Marketing and Business Approaches



Multi-stage development process: (1) problem-solution fit; (2) product-market fit; and (3) business model fit

COPRH Con
Colorado Pragmatic Research in Health Conference

Value proposition statements

Initial value proposition statement

- "The PREVENT tool delivers tailored, evidence-based physical activity and nutrition prescriptions that account for SDOH to help you improve your care beyond generic recommendations within the time constraints of a patient encounter.

Modified value proposition statement following customer discovery

- "The PREVENT tool helps healthcare teams pragmatically address obesity among adolescents by displaying pertinent health data; delivering personalized, evidence-based lifestyle change recommendations; providing community resources; and automating virtual patient follow-up."

Kepper MM, Walsh-Bailey C, Brownson RC, Kwan BM, Morrato EH, Garbutt J, de las Fuentes L, Glasgow RE, Lopetegui MA, Foraker R. Development of a Health Information Technology Tool for Behavior Change to Address Obesity and Prevent Chronic Disease Among Adolescents: Designing for Dissemination and Sustainment Using the ORBIT Model. Frontiers in Digital Health. 2021 Mar 10;3:23.

Systems and Complexity Science

- Systems thinking: The process of understanding how things influence one another within a whole (Rabin & Brownson, 2017)
- Complex adaptive systems with systems dynamic mapping

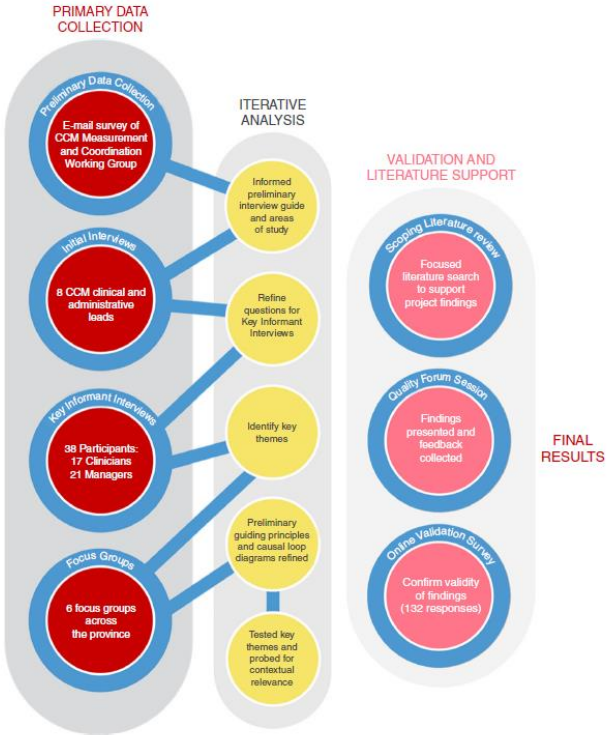
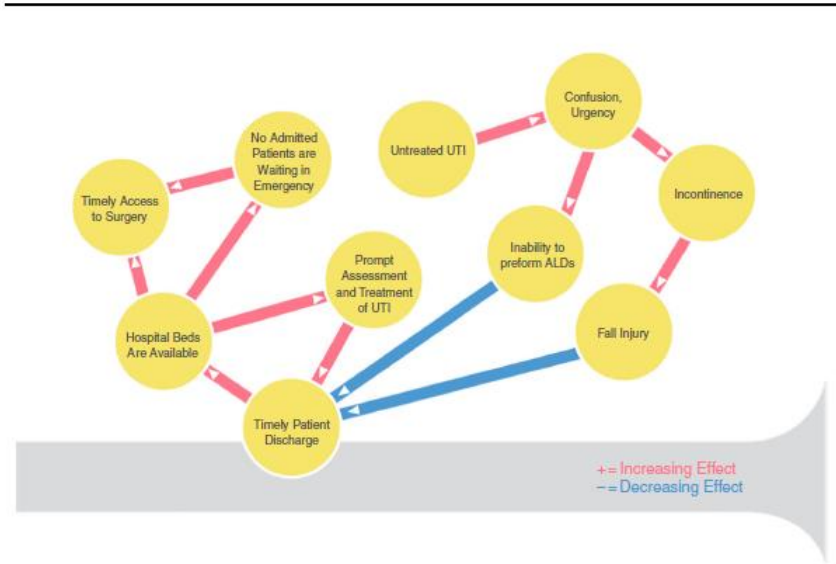


Figure 1. Data collection and analysis process



Systems thinking to support clinical system

311

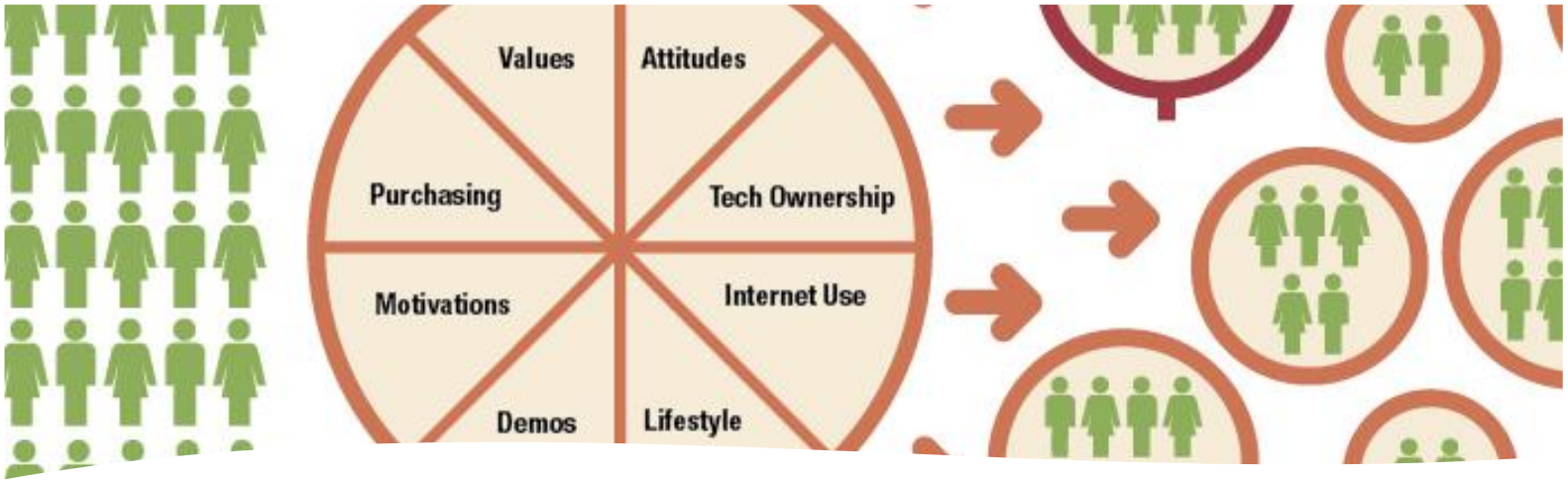
Figure 3. Example of a causal loop diagram illustrating impacts of untreated urinary tract infections

Best A, Berland A, Herbert C, Bitz J, van Dijk MW, Krause C, Cochrane D, Noel K, Marsden J, McKeown S, Millar J. Using systems thinking to support clinical system transformation. Journal of health organization and management. 2016 May 16.

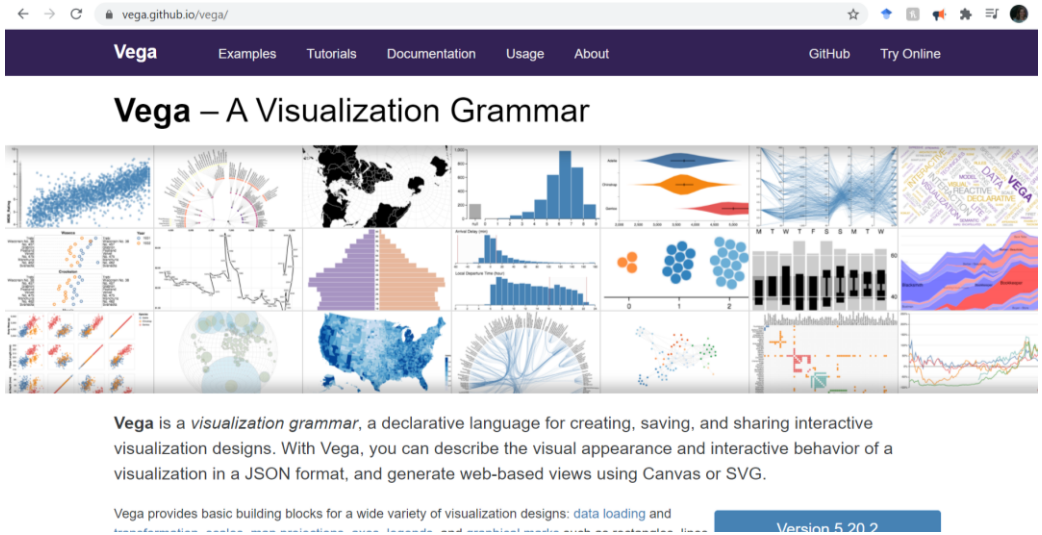
COPRH Con
Colorado Pragmatic Research in Health Conference

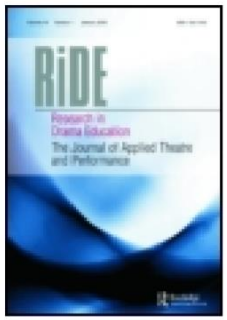
Communication and the Arts

- Social marketing
  - “a social influence technology involving the design, implementation and control of programs aimed at increasing the acceptability of a social idea or practice in one or more groups of target adopters” (Kotler and Roberto, 1989).
- Audience Segmentation



Arts-Based Dissemination: Data Visualization and Graphic Design



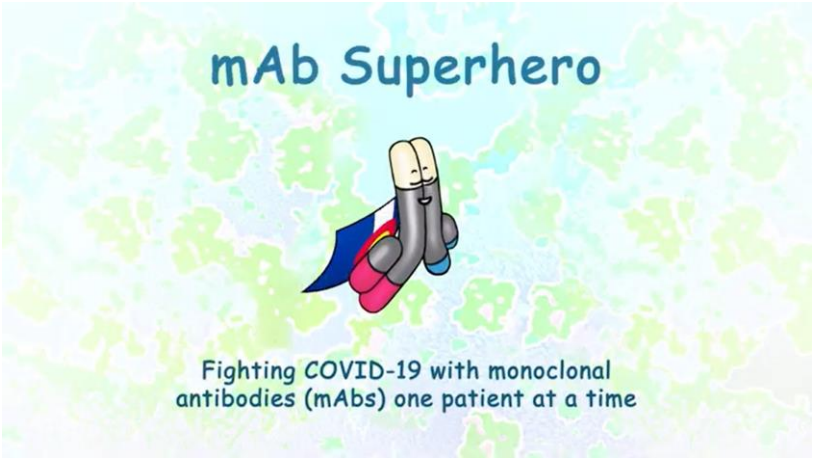


Research in Drama Education: The Journal of Applied Theatre and Performance

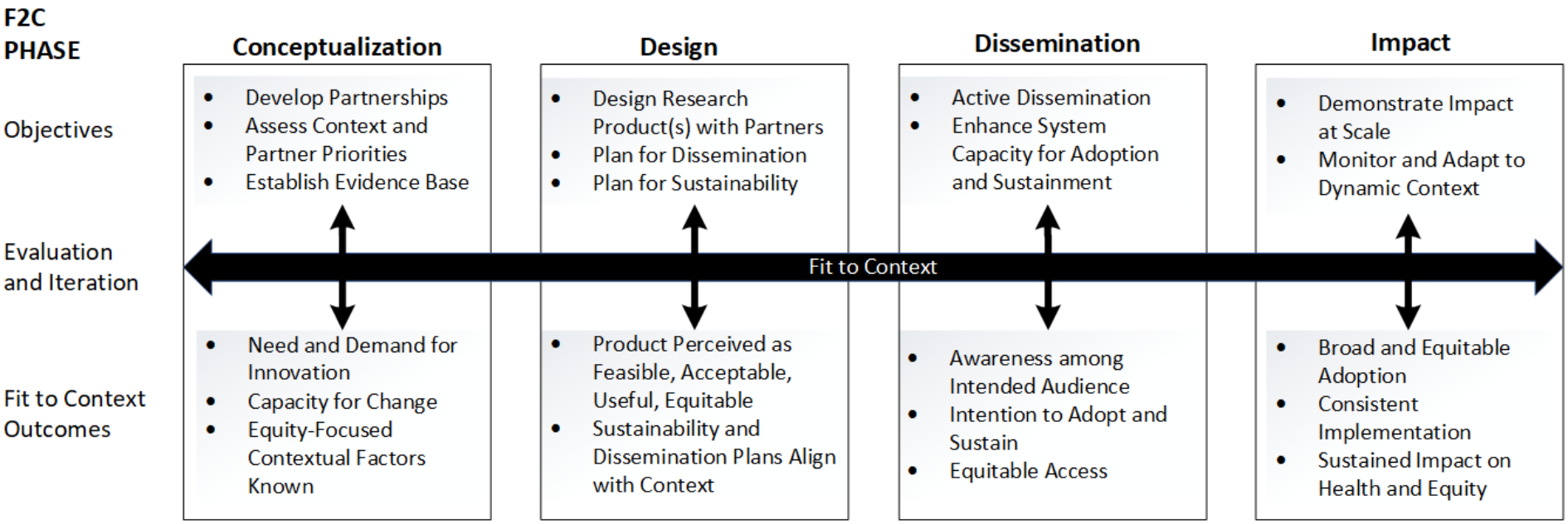
Publication details, including instructions for authors and subscription information:
http://www.tandfonline.com/loi/crde20

Genetic testing in a drama and discussion workshop: exploring knowledge construction

Emily Dawson [a] , Anne Hill [b] , John Barlow [b] & Emma Weitkamp [a]
[a] Science Communication Unit , The University of the West of England , Bristol, UK
[b] Faculty of Media, Arts and Society , Southampton Solent University , Southampton, UK
Published online: 06 Aug 2009



The Fit to Context (F2C) Framework for D4DS



Kwan BM, Luke DA, Adsul P, Koorts H, Morrato EH, Glasgow RE. Designing for Dissemination and Sustainability: Principles, Methods, and Frameworks for Ensuring Fit to Context. In: Brownson RC, Colditz GA, Proctor EK, eds. Dissemination and Implementation Research in Health: Translating Science to Practice, 3rd ed. *Forthcoming.*

COPRH Con
Colorado Pragmatic Research in Health Conference

Fit to Context

- Ensuring the products of research:
  - Are culturally appropriate
  - Can be used in resource-limited settings
  - Align with the strengths and assets of the intended audience and setting
  - Impact outcomes that matter to communities and potential adopters and influencers

Fit to Context Outcomes

- An assessment of the extent to which the research product, dissemination plan, and/or sustainability plan exhibit fit to context
  - Matches the needs, resources, workflows, and contextual characteristics of the target audience and setting
- Problem-solution fit
- Relative advantage, compatibility, complexity, observability
- Perceived acceptability, appropriateness, and feasibility
- Cultural appropriateness
- “Implementability”
- Sustainability
- Perceived usefulness and usability, user satisfaction
- Aligned with how the intended audience receives information
- Aligned with business models

D4DSE for Pragmatic Research: The Invested in Diabetes Study

- Patient and Practice Engagement
- Application of D&I Frameworks: Enhancing Replicating Effective Programs (REP)
- Enhancing Intervention Fit to Context
- Assessing Fidelity, Adaptation, Cost, and Potential Sustainability
- Planning for Active Dissemination

Research reported in this presentation was funded through a Patient-Centered Outcomes Research Institute (PCORI) Award (IHS-1609-36322). The views, statements, and opinions presented in this work are solely the responsibility of the authors and do not necessarily represent the views of the Patient-Centered Outcomes Research Institute (PCORI), its Board of Governors or Methodology Committee.

COPRH Con
Colorado Pragmatic Research in Health Conference

Characteristics of Pragmatic Research

- The research question of interest...
  - …tests if an intervention is effective in routine practice or service settings, often compared to well-defined usual care or existing programs and/or other comparator interventions.
  - …considers the setting in which the intervention will be used (and its existing personnel and infrastructure) and how the intervention will be implemented and sustained in real-world contexts

COPRH Con
Colorado Pragmatic Research in Health Conference

Invested in Diabetes

- Cluster randomized pragmatic trial (Hybrid type 2)
- Comparative effectiveness of patient-driven vs standardized diabetes shared medical appointments (SMAs)
  - SMA models use the same curriculum
  - Both are 6 sessions, about 2 hours each session
  - Models differ in terms of who delivers the curriculum (health educator vs multidisciplinary care team including behavioral health and a peer mentor) and tailoring module order and emphasis on topics to cohort needs and preferences
- Funded by PCORI Improving Healthcare Systems Award (MPIs: Kwan & Waxmonsky)
- Patient and practice representatives engaged in research prioritization, design, conduct, and dissemination

Kwan BM, Dickinson LM…, Waxmonsky JA. The Invested in Diabetes Study Protocol: a cluster randomized pragmatic trial comparing standardized and patient-driven diabetes shared medical appointments. Trials. 2020 Jan 10;21(1):65

Implementation and Adaptation to Enhance Fit to Context

Enhanced Replicating Effective Programs

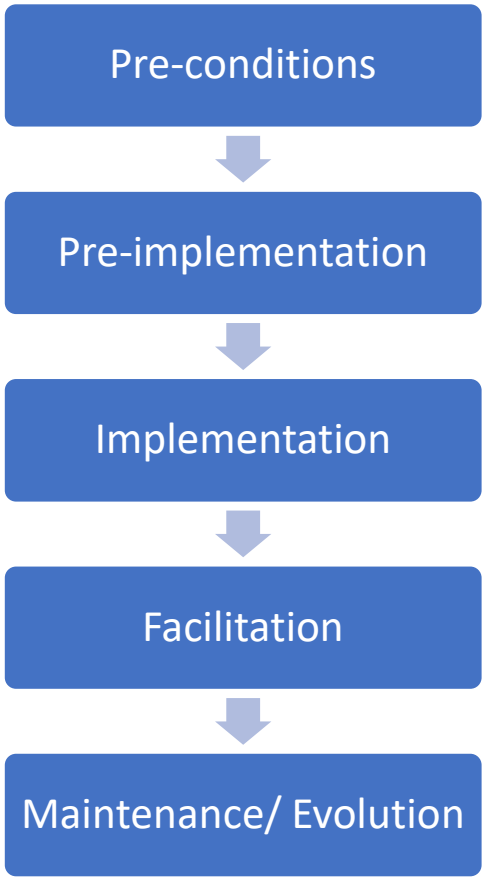


Table 5. Intervention Content, Delivery, and Training: Adaptations Fit to Context

Contextual Factors	Invested in Diabetes Practice Characteristics	Corresponding Adaptations
Data capabilities and population management	All practices had electronic health records Some had registries to help identify eligible patients Varied experience with PRO collection and use	Simplified eligibility criteria for patients (any adult with Type II diabetes, no exclusion criteria) for ease of identification Ensured PROs were relevant to clinical care and SMA discussions
Payer mix	Practices vary in payer mix, with different billing and reimbursement practices	Informed guidelines for frequency of prescribing provider visits (at every session/1st/last only etc) Provided documentation templates and common billing codes used for diabetes SMAs
Prior experience with SMAs	Some practices had prior experience delivering and billing for diabetes SMAs	Informed intensity of technical assistance, plans for process mapping; practice coaches spent more time with helping practices determine SMA workflows and staffing
Team-based care	Practice all had behavioral health Some were fully integrated with behavioral health providers and experienced with integrated team-based care; others had collocated care where the behavioral health provider operated independently of the primary care provider	Influenced plans to include behavioral health providers in trainings alongside health educators (in patient-driven condition) and adaptations to mental health and stress and coping content

- Kwan BM, Rementer J…, Waxmonsky JA. Adapting Diabetes Shared Medical Appointments to Fit Context for Practice-Based Research (PBR). J Am Board Fam Med. 2020 Sep-Oct;33(5):716-727.

COPRH Con
Colorado Pragmatic Research in Health Conference

Alignment with Real-World Practice

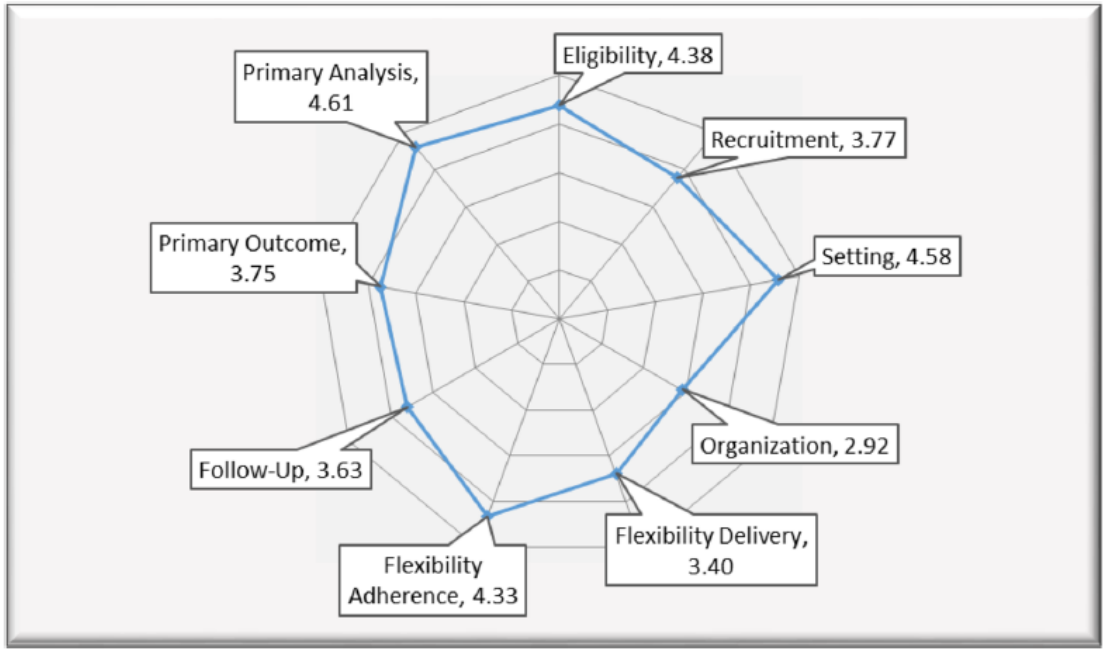


Fig. 1 PRECIS-2 ratings of the study protocol by Invested in Diabetes study team. Radar plot showing average study protocol ratings by study team on the nine PRECIS-2 domains, with points closer to center representing explanatory ratings (1) and points closer to the edge representing pragmatic ratings (5). Legend: 1 = very explanatory. 5 = very pragmatic

- Glasgow RE, Gurfinkel D, Waxmonsky J…, Kwan BM. Protocol refinement for a diabetes pragmatic trial using the PRECIS-2 framework. BMC Health Serv Res. 2021 Oct 2;21(1):1039.

COPRH Con
Colorado Pragmatic Research in Health Conference

Assessing Fidelity and Adaptations

Fidelity Observations of Diabetes Shared Medical Appointments for the Invested in Diabetes Pragmatic Trial

Dennis Gurfinkel MPH,[1] Bethany M. Kwan PhD MSPH,[1] Andrea Nederveld MD MPH[1], Jodi Summers Holtrop PhD MCHES, [1] Anowara Begum MPH,[1] Angie Lanigan MPA RD[2], Jeanette Waxmonsky PhD[1]

(1) University of Colorado Anschutz Medical Campus, Aurora, CO;

(2) American Academy of Family Physicians, Kansas City, MO

University of Colorado Anschutz Medical Campus

RESEARCH OBJECTIVE

Assess fidelity to the conceptual framework and protocol for the Invested in Diabetes study, a **pragmatic cluster-randomized comparative effectiveness trial** comparing two diabetes shared medical appointments (SMAs) delivery models (Kwan et al 2020).

Compare Standardized (STD) vs Patient-Driven (PTD) diabetes SMAs –

- Same 6-session skills-building curriculum (Targeted Training in Illness Management; TTIM)
- PTD includes multidisciplinary team delivering SMAs (peer mentors and behavioral health providers (BHPs))
- PTD allows patients to select topic order and emphasis

We expected PTD SMAs would show:

- Greater fidelity behavioral health components
- Less overall fidelity to protocol
- Increased autonomy and relatedness needs support as defined by **self-determination theory** (SDT; Ryan & Deci, 2000)
- Increased patient attendance

METHODS

Trained observers used a structured guide to evaluate ~8% of randomly selected SMA sessions, observed in-person or virtually, depending on session format (pre- and post-Covid-19). Attendance sheets were maintained by practices.

Structured fidelity observation guide:

- Session number and duration
- Patients and facilitators in attendance
- TTIM curriculum content covered
- # of patients completing prescribing provider visits
- Group facilitation style and skills (5-point bipolar scale)
  - Following the TTIM **script** verbatim vs paraphrasing
  - **Balance** of didactic vs group discussion
  - Demonstration of effective group facilitation **techniques**
  - Demonstration of SDT psychological needs support: **autonomy, competence, relatedness**

Practice attendance sheets

- Patient attendance records
- Staff personnel scheduled

Analysis:

- Descriptive statistics to assess fidelity elements, retention rates, and ratings
- T-tests to compare differences between PTD and STD

RESULTS

Table 1: Select Fidelity Observation and Attendance Data

	PTD	STD	P-diff
Fidelity Observation Data	N=30	N=38	
N(%) of classes observed with all topics covered	26 (87%)	32 (84%)	0.78
Mean (SD) time spent on observed session (out of 120min)	94 (24)	81 (21)	0.45
N(%) observed sessions with peer mentor present (PTD only)	16 (53%)	1 (2%)	--
Attendance Data			
	N=75	N=72	
N(%) peer mentor assigned to cohort (PTD only)	71 (95%)	0	--
N (%) BHP assigned to cohort (PTD only)	60 (80%)	0	--
N(%) evidence of topic selection present (PTD only)	57 (76%)	0	--
Average #(SD) sessions patients attended (out of 6)	3.90 (1.76)	3.96 (1.80)	0.58

Table 2. Ratings of diabetes SMA facilitation style overall and by study arm

	PTD arm M (STD)	STD arm M (STD)	P-diff
Script*	2.71 (0.81)	3.02 (1.01)	0.19
Balance†	2.86 (0.59)	2.61 (0.72)	0.16
Techniques‡	3.75 (1.08)	3.95 (1.05)	0.46

Table 3. Ratings of SDT needs supportiveness overall and by study arm

	PTD arm M (STD)	STD arm M (STD)	P-diff
Autonomy‡	4.18 (1.06)	4.41 (0.98)	0.38
Competence‡	4.57 (0.57)	4.51 (0.61)	0.70
Relatedness‡	4.52 (0.80)	4.64 (0.80)	0.56

*1=verbatim; 5=paraphrasing †1=didactic; 5=group discussion ‡1=low support; 5=high support

POPULATION STUDIED

Participating practices: 22 primary care sites (12 federally qualified health centers, 10 family and internal medicine commercial payer practices) with integrated behavioral health serving patients with Type II diabetes (20 sites included in this analysis).

PRINCIPAL FINDINGS

The distinguishing features of the PTD model (e.g., presence of peer mentor and BHP, topic selection) were inconsistently present, specifically peer mentor presence, suggesting challenges in maintaining fidelity to the PTD approach.

Existing primary care personnel delivered diabetes SMAs using a skills-building curriculum demonstrated excellent support for psychological needs for autonomy, competence, and relatedness – with little observed difference in facilitation style or needs support between SMA delivery models.

Attendance to classes was the same between conditions, indicating equal amount of patient engagement.

ACKNOWLEDGEMENTS

REFERENCES

CONTACT INFORMATION

COPRH Con
Colorado Pragmatic Research in Health Conference

Assessing Costs and Sustainability

Costs Associated with Implementation of Two Models of Diabetes Shared Medical Appointments

Jeanette A. Waxmonsky, PhD[1,2] Dennis Gurfinkel, MPH[1] Natalie Ritchie, PhD[1,4,5] Jayna DeRoeck CDE,[3] Bethany M. Kwan, PhD MSPH,[1,2] & Mark Gritz, PhD[1,6]

(1) Adult & Child Consortium for Health Outcomes Research & Delivery Science (ACCORDS), (2) Department of Family Medicine, University of Colorado Anschutz Medical Campus, Aurora, CO, (3) Center for Health Systems Research, Office of Research, Denver Health and Hospital Authority, Denver, CO, (4) Department of Psychiatry, University of Colorado Anschutz Medical Campus, Aurora, CO (5) College of Nursing, University of Colorado Anschutz Medical Campus, Aurora, CO (6) Division for Healthcare Research & Policy, University of Colorado Anschutz Medical Campus, Aurora, CO

University of Colorado Anschutz Medical Campus

RESEARCH OBJECTIVE

- Shared medical appointments (SMAs) for patients with diabetes are an evidence-based and potentially efficient approach to provide self-management education and support in a group setting.
- The Invested in Diabetes study tests two approaches to implementing SMAs (standardized vs. patient-driven).[1]
- **Objective:** For sustainability planning, we evaluated personnel time and cost, and other costs for starting and delivering diabetes SMAs in primary care.

POPULATION STUDIED

Population and Study:

- 21 of 24 primary care practices in Colorado and Kansas City randomized to one of two models for implementing diabetes SMAs. 3 practices stopped participation prior to data collection.
- Both models included six two-hour sessions using the Targeted Training in Illness Management curriculum for groups of approximately 5-15 patients with diabetes.
- Standardized approach is delivered by a health educator with accompanying provider visits.
- Patient-driven approach further incorporates behavioral health providers, peer mentors (volunteer position), and patient-led topic prioritization, in response to prior feedback from patient stakeholders.

SMA IMPLEMENTATION

Description of Cohorts and Roles:

- Initial cohorts at each practice took between 2 and 12 months to plan (6.25 month average)
- Cohorts reported were weekly (6 weeks), bi-weekly (3 months), and monthly (6 months)
- Roles required to deliver SMAs were filled by various staff (see Table 1), and include paid and volunteer positions.
- All practices attended an onboarding training. Patient-driven practices also had a peer mentor training.

STUDY DESIGN

Cost data collection and evaluation:

- Practices were surveyed around cost using Time-Driven Activity Based Costing[2] methodology at two time points to collect costs for the initial start-up period (prior to first cohort), and the SMA implementation for the first completed cohort (after the last SMA for cohort).
- Surveys asked staff hours devoted to activity groups during the two periods for each team member involved.
- Surveys asked for other costs associated with SMAs at each time, including staff training, non-recurrent start-up expenses, materials, and overhead.
- Staff hours are converted to costs using US Bureau of Labor Statistics mean salaries for each staff position/role. Salaries for volunteer roles were not calculated, but time is reported.
- To account for trainer time for trainings conducted by study staff, 5 hours of staff time was added to all practices for staff training. 5 additional hours were added to patient-driven practices for peer mentor trainings. This did not vary by how many staff or peer mentors were trained.
- Costs are broken down by start-up and implementation costs, and reported by SMA implementation model (standardized vs. patient-driven).

Table 1: SMA Roles within Practices

SMA Role	Who fills the role
Health Educator	- Certified Diabetes Educator, Registered Dietician - Program manager or coordinator (including DSME coordinator) - Lifestyle coach, health coach, other community health worker - Registered Nurse, nurse practitioner, licensed practical nurse - Case manager
SMA Coordinator	- Medical assistant, licensed practical nurse, registered nurse - Certified diabetes educator - Program coordinator
Prescribing Provider	- Physician (MD, DO) - Other provider (NP, PA) - Pharmacist
Behavioral Health Provider	- Health psychologist (PhD) - Social worker (LCSW, LSW) - Other BHP
Roles associated with indirect support	- Data analyst, IT professional, biostatistician - Office/clinic/practice manager - Administrative support staff, receptionist - Outreach coordinator, site coordinator, recruiter - Medical assistant, medical interpreter, patient navigator - Pharmacist - Registered dietician, certified diabetes educator - Chief medical officer, executive director

Table 2: Cost

	Start-up			Implementation		
	Personnel Time, hours Avg (Min, Max)	Personnel Cost, $ Avg (Min, Max)	Other Cost, $ Avg (Min, Max)	Personnel Time, hours Avg (Min, Max)	Personnel Cost, $ Avg (Min, Max)	Other Cost, $ Avg (Min, Max)
Standardized SMAs	79.6 (21, 162)	$3,420 ($848, $8,700)	$957 ($0, $6,736)	53.4 (34.5, 100.5)	$1,948 ($1,085, $3,397)	$137 ($0, $615)
Patient-driven SMAs	131.1 (58, 213.9)	$4,660 ($1,229, $9,877)	$1,717 ($0, $7,629)	83.4 (49, 132)	$2,430 ($699, $5,015)	$177 ($0, $802)
All practices	102.5 (16, 140)	$3,971 ($848, $9,877)	$1,295 ($0, $7,629)	67.7 (34.5, 132)	$2,177 ($699, $5,015)	$156 ($0, $802)

Cost Results:

- Reported costs of delivering diabetes SMAs varied considerably among practices, both in personnel time and other expenditures. Some practices did not report any additional expenditures for the SMAs, while others reported material costs, travel, portions of facility cost etc.
- As expected, delivering a model with a larger team involved more hours during planning and implementation than an approach with fewer personnel, plus modest increases in other costs.
- Differences in roles involved changed cost per practice, and could affect reimbursement. Roles selected were due to a combination of staff availability and interest in SMAs, as well as scheduling decisions made at each practice.

IMPLICATIONS FOR POLICY AND PRACTICE

- Practices seeking to implement diabetes SMAs should consider:
  - Diabetes SMAs may take considerable hours to set up and implement. Roles to involve may vary based on who is available at the practice, and desired reimbursement.
  - What elements of SMAs are most important to the care of their patients, as well as providers and other stakeholders.
  - The patient-driven approach studied resulted in costs that were close to double that of the standardized approach, and require practices to have integrated behavioral health.
  - The staffing resources required relative to available funding and/or potential reimbursement for each model.
  - Average per patient costs may be lowered if practices are able to deliver diabetes SMAs to relatively larger groups.
- Reimbursement options likely vary by factors such as setting, payer mix, and credentials of personnel involved in SMA delivery. While physician visit reimbursement is more lucrative, some sites chose to utilize other provider types or not have as many prescribing provider visits due to scheduling or not wanting patients to have to pay co-pays, resulting in lower reimbursement.
- Utilizing volunteers for the peer mentor role and not considering some costs (i.e., facility cost) to be attributable to SMAs may have reduced reported costs.

CONCLUSION

- The patient driven SMAs are more expensive and resource intensive to deliver than the standardized SMAs. That said, practices seeking to implement diabetes SMAs should consider what elements of SMAs are most important to their patients and the resources required relative to reimbursement for each model.
- Time-Driven Activity Based Costing (TDABC) is an important methodology for determining implementation cost and capacity utilization of resources at the practice level for pragmatic trials.
- Future analyses will examine whether patient-driven SMAs lead to better clinical and patient reported outcomes relative to standardized SMAs.

REFERENCES

ACKNOWLEDGEMENTS

Contact information

COPRH Con
Colorado Pragmatic Research in Health Conference

Planning for Active Dissemination

- Implementation Guide
- Value proposition design

Guide to Implementation of Diabetes Shared Medical Appointments in Primary Care

Contents

General Diabetes Language

If you are struggling with managing diabetes group classes can help.
Here you will find:
- Education about Diabetes
- Answers to questions and concerns
- Easy and doable strategies to help make healthy choices
- Tips to cope with stress
- Support from others who have similar issues

You are your best health advocate, you don't have to go it alone.

If you have a family member or friend who has diabetes who doesn't know what to do, refer them to our group classes.
For more information contact your provider.

Newly Diagnosed

If you are newly diagnosed with diabetes group classes can help.

Here you will find:
- Education about Diabetes
- Support from other patients who have similar issues
- Problem-solving strategies to help learn to manage your diabetes

If you have a family member or friend who doesn't know what to do, refer them to our group classes

High A1C

Take control of your diabetes!

If you are struggling with managing diabetes group classes can help.

Here you will find:
- Problem-solving strategies to lower your A1c
- Support from other patients who have had similar issues.
- Answers to questions and concerns

You are not alone!

If you have a family member or friend who doesn't know what to do, refer them to our group classes

Diabetes Distress

If you are feeling physically and emotionally overwhelmed, group classes can help.

Here you will find:
- Lifelong strategies to help cope with the many challenges of diabetes
- Self-care tools
- Support from other patients with similar issues
- Answers to questions and concerns

You are not alone!

If you have a family member or friend who doesn't know what to do, refer them to our group classes.

Patients with Multiple Chronic Conditions

If you are struggling with multiple medical conditions and diabetes, group classes can help.

Here you will find:
- Tips to cope with anxiety and stress
- Easy and doable strategies to help make healthy choices
- Answers to questions and concerns
- Support from other patients with similar conditions

If you have a family member or friend who doesn't know what to do, refer them to our group classes.

Support from Family/Friends

Start the change your family needs!

If someone in your life who has diabetes and doesn't know what to do, show your support by telling them about our group classes.

Figure 2. Invested in Diabetes marketing recruitment messages to invite participants to join diabetes shared medical appointments.

COPRH Con
Colorado Pragmatic Research in Health Conference

How Might You Adopt a D4DSE Perspective in Your Research

- Change your mindset
  - Consider who will use your product, under what circumstances, and to address what urgent need – design studies to test your product IN and FOR THAT CONTEXT (yes, even efficacy trials)
  - Expect the need to pivot and adapt over time
- Enhance your skills
  - Team science!
- Build systems and infrastructure
- Incentivize dissemination beyond academic journals and conference presentations

Questions?

Thank you!

Bethany.kwan@cuanschutz.edu

COPRH Con

Colorado Pragmatic Research in Health Conference