Dissemination, Implementation, Knowledge Translation, and Scale up of Nutrition and Physical Activity Interventions in the Pursuit of a Public Health Impact

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Who is this talk for?

- *Scientists seeking to have a public health impact with their work.*
- *Scientists that are interested in service provision, but aren't looking to be service providers or policy implementers.*
- *Scientists interested in close collaboration with community organizations, health care settings, and/or systems that provide services or interface with the populations that could benefit from health promotion*

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What is the message?

- *Current knowledge translation, dissemination, implementation, and scalability research is struggling due to an over-reliance on evidence-based interventions relative to evidence-informed principles.*
- *Co-production of evidence is promising for improving practice and participant outcomes.*
- *Ideas for moving research in translational science forward*
- *A call to action for more clearly defining this area of research within the broader spectrum of translational science*

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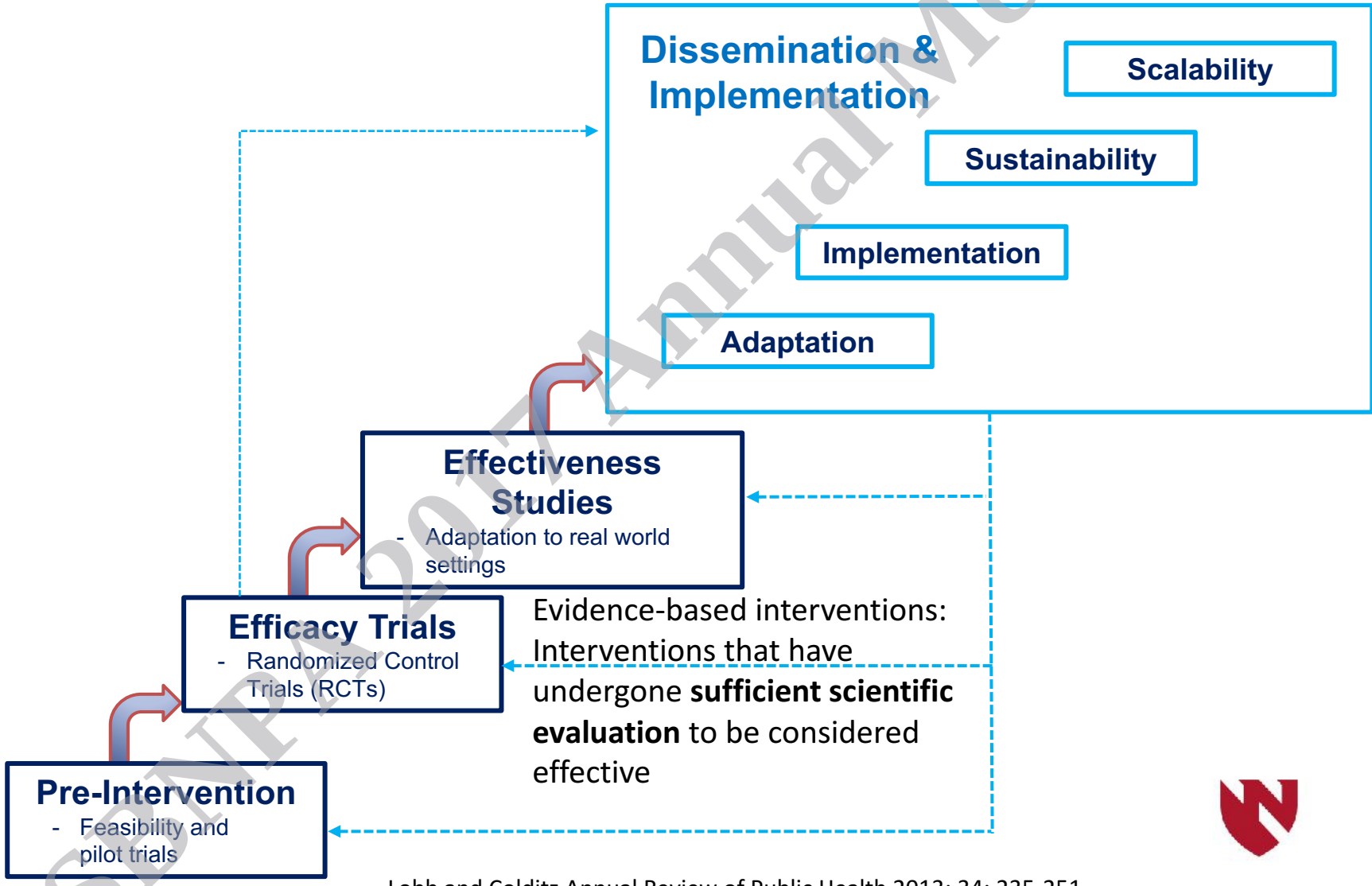
Dissemination & Implementation



Lobb and Colditz Annual Review of Public Health 2013; 34: 235-251.

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Knowledge Translation

- A dynamic and iterative process that includes **synthesis, dissemination**, **exchange** and ethically-sound application of knowledge to improve the health of Canadians, provide more effective health services and products and strengthen **the health care system**.

  - Synthesis of existing research.
  - Dissemination to stakeholders (patients, practitioners, policy makers) could include engaging stakeholders in developing and executing dissemination plan, tools creation, and media engagement.
  - Exchange- interaction between the knowledge user and the researcher, resulting in mutual learning.
  - Ethics- activities are consistent with ethical principles and norms, social values, as well as legal and other regulatory frameworks – while keeping in mind that principles, values and laws can compete among and between each other at any given point in time.

http://www.cihr-irsc.gc.ca/e/29418.html#1

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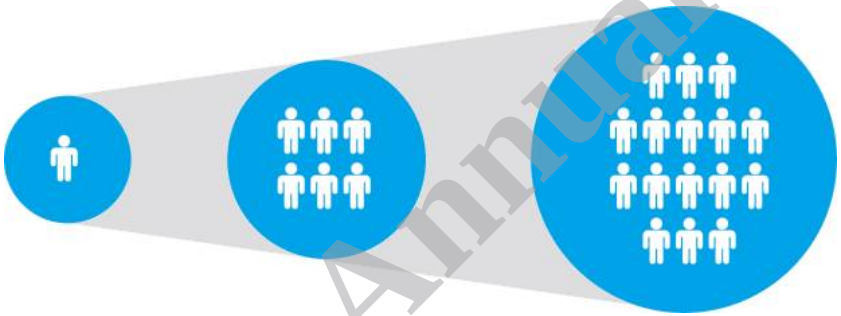
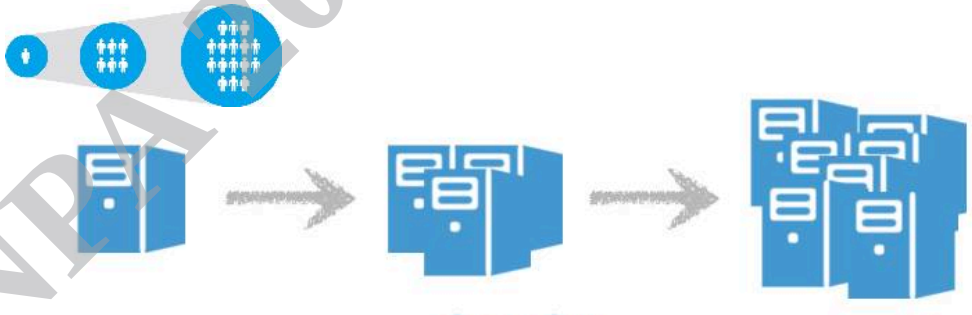
Scalability & Scale Up

- **efficacious** interventions expanded under real world conditions **to reach a greater proportion of the eligible population, while retaining effectiveness**. (Milat, King, Bauman, & Redman, 2011)



- extending the **reach** of an intervention by **institutionalizing** the intervention within a given organization/region or **by replicating it in other localities**, cities, or states or both (Reis et al., 2016).



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What is a public health impact?

Glasgow, Vogt, and Boles, 1999

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A KT, D&I, Scale-up Commonalities

- Sufficient scientific evaluation based on **a hierarchy of evidence**.

- Movement of an **evidence-based product** from science to practice.

- Providing the evidence-based product with 'how to' resources and support (and a focus on fidelity while allowing *modest adaptation*) will result in quality knowledge translation.

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A challenge… Stakeholders…

- Often do not share the value of a hierarchy of evidence… and value multiple types of information, some more than traditional research evidence.

- May actively criticize evidence-base as not relevant.
  - Not like my… place, people, resources, system.
  - Not like… me.

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A challenge… Stakeholders…

- Have unique knowledge, skills, and strategies that are often rolled over with an evidence-based intervention's roll out or scale up.

- These challenges can put a researcher on his/her heels on 3 fronts—defending why some evidence is better than other, needing methods to avoid localism, and challenging local stakeholder expertise.

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An Example from Scotland

- The Scottish Style of policymaking is built on:
  - high levels of consultation with stakeholders to gather **oral and written evidence**
  - a willingness **to form partnerships** with local policymakers rather than impose national policies

- Successful case studies of this approach did not highlight the hierarchy of evidence or scientific information, but rather focused on
  - user-testimony
  - assets-based approaches (i.e., use of existing resources)
  - short- term local evaluation of costs or resources saved
  - better short-term outcomes for the service users
  - higher community engagement

Cairney, 2016

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Advice for scientists

- Within this climate of decision making, some policy researchers have concluded that scientists should:
  - focus on evidence of the *active ingredient* of interventions
  - understand that **the intervention and delivery channels will take a particular form that may not be what it was in 'the research world'** based on the level of engagement of community bodies, non-governmental organizations and/or service users.

Cairney, 2016

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Current KT, D&I, and scalability research is struggling due to an over-reliance on evidence-based interventions relative to evidence-informed principles.

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A solution: co-production of evidence

- **Integration of scientific and community/clinical systems** to address questions that are scientifically innovative *and* have practical implications for stakeholders.
- A process of developing sustainable program, practice, or policy approaches **using a vertical and horizontal systems approach**.
- Research synthesis focuses on **evidence-based principles (i.e., active ingredients)** rather than products.
- Organizational or system governance, values, resources, strategies and structure are leveraged to **design for scale and sustainability**.

Estabrooks & Glasgow, 2006; Cairey & Oliver, 2017

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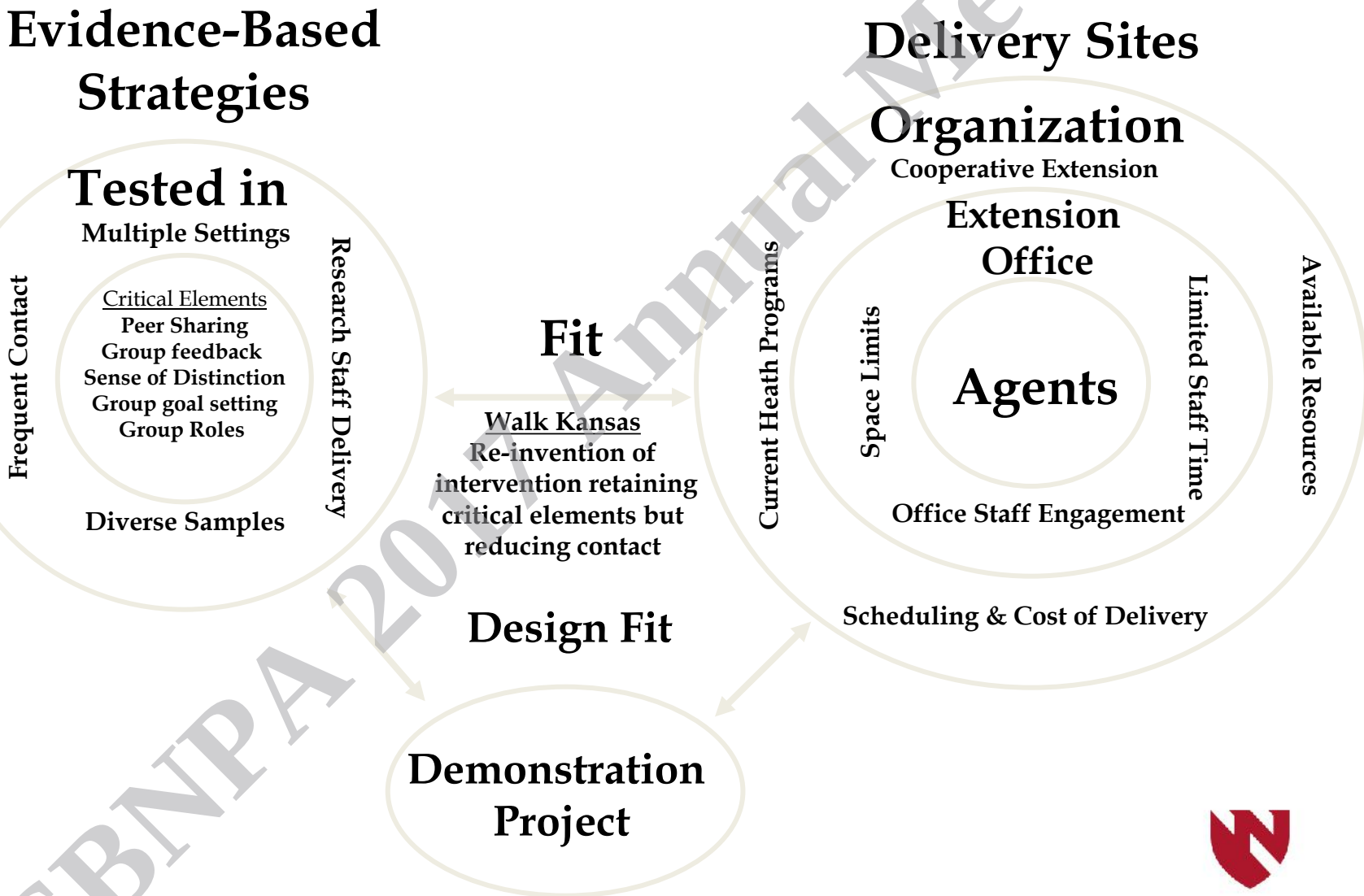
Co-Production of Research: A Simple Idea



Estabrooks, Bradshaw, Dzewaltowski, & Smith-Ray, ABM, 2008;
Estabrooks & Glasgow, AJPM, 2006

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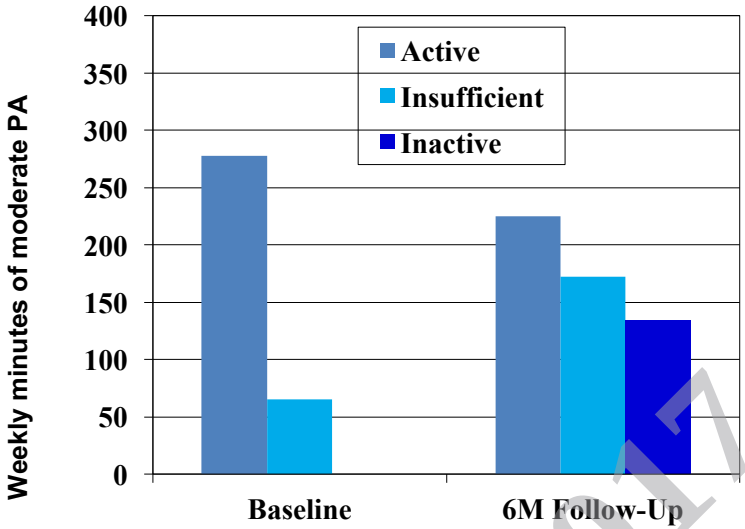
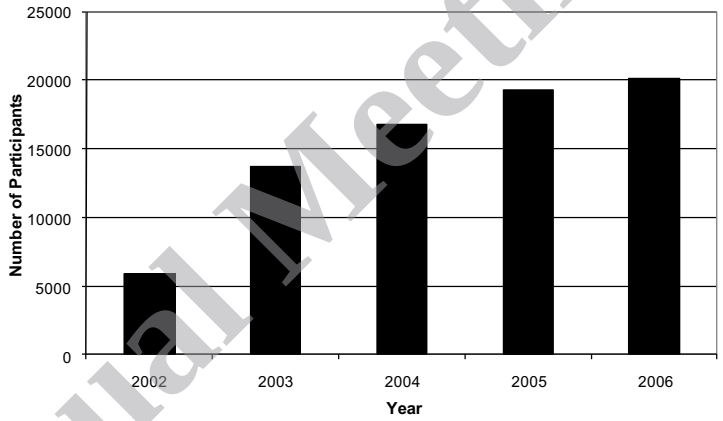
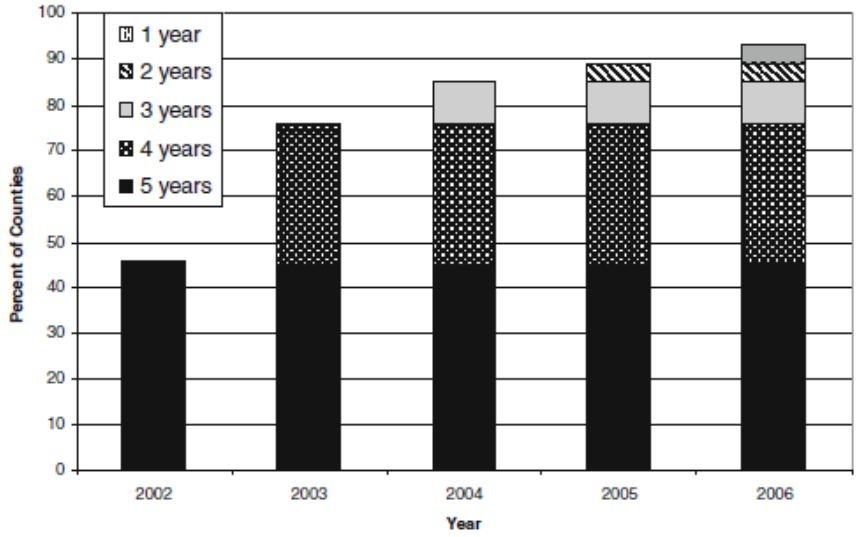
Walk KANSAS
A Fitness Challenge







Estabrooks et al., *Annals of Behavioral Medicine, 2008*

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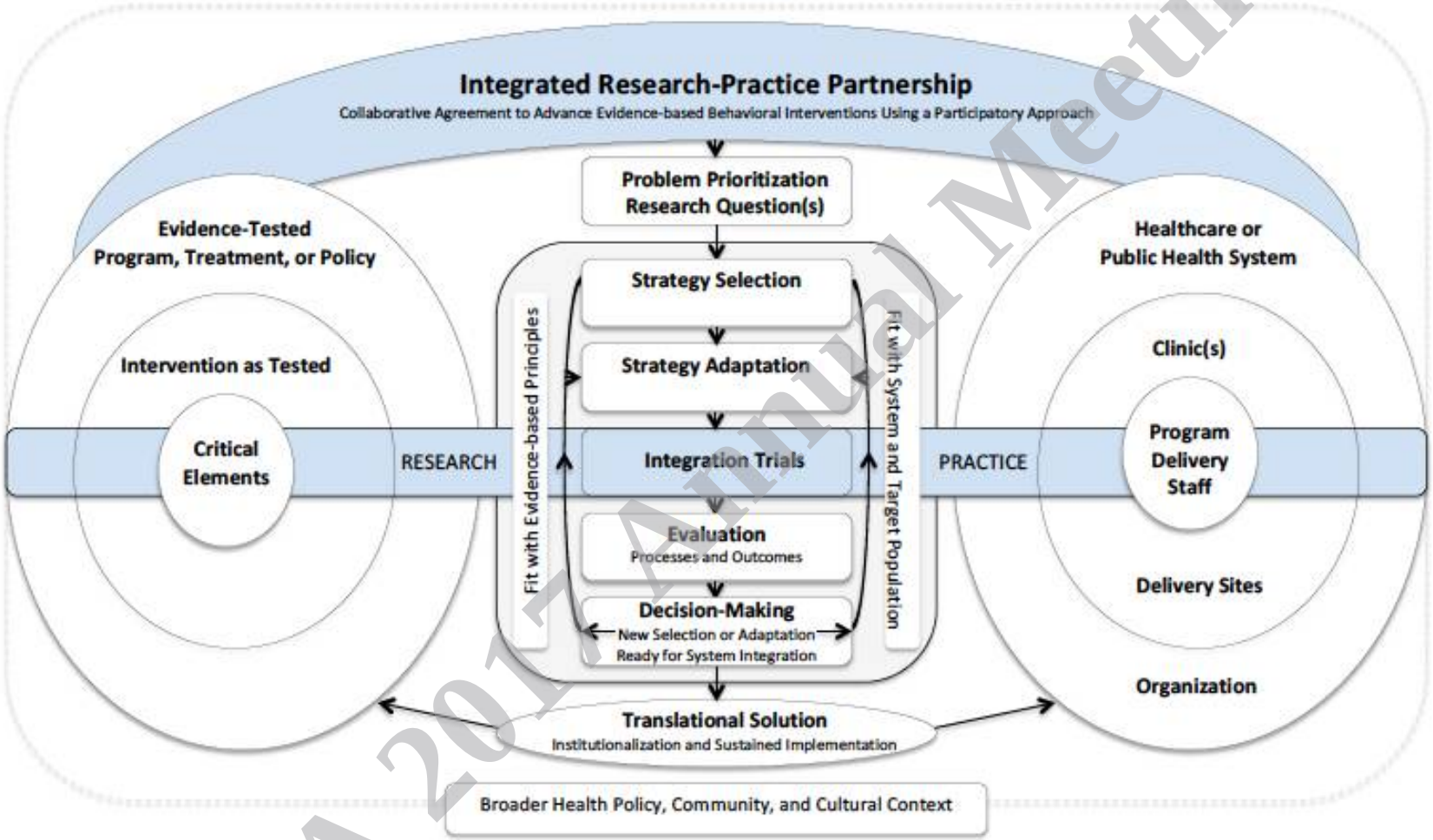

Estabrooks, Harden, Almeida, Hill, Johnson, Greenawald, in progress

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Who is involved?

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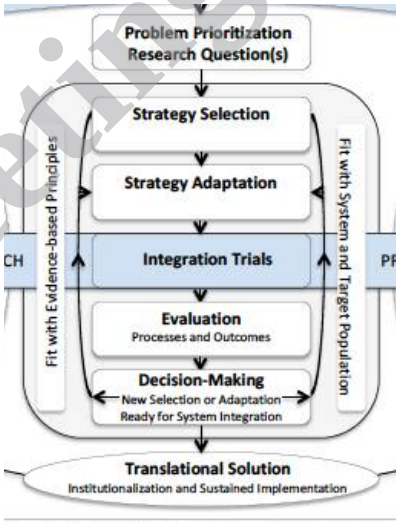
Carilion Healthy Lifestyle Study

Problem Prioritization & Research Questions



- Problem Prioritization
  - 68% of patients have a BMI >25 (target population) and ask nurse care coordinators about weight loss.
  - Patient education handouts to support weight loss.
  - Nursing leadership would like a systematic approach
- Research Questions
  - What is the best way to increase evidence-based weight management support through Care Coordinators?
  - How feasible is it?
  - Can an adapted evidence-based approach help patients lose a clinically meaningful amount of weight?

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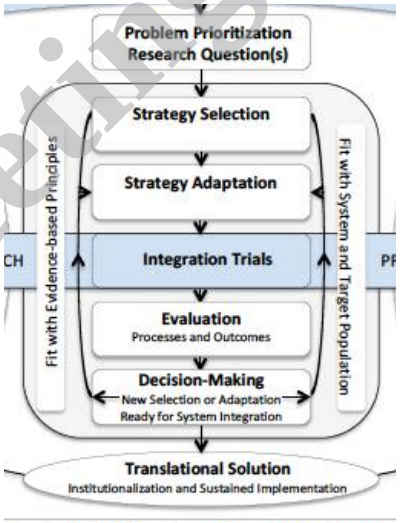
Carilion Healthy Lifestyle Study

Strategy Selection & Adaptation



- Strategy selection
  - Clinical Intervention—lifestyle intervention that can be reimbursed.
  - Implementation strategy-consultee centered approach.
- Strategy Adaptation
  - DPP materials moved to telephone and one-on-one sessions (scripted and process evaluation).
  - Integrate counseling tools into electronic health record.
  - Consultee centered approach developed from principles (completely ‘new’ intervention) and integrating evidence-based 5 A’s principles-to facilitate goal setting, barrier resolution, and feedback

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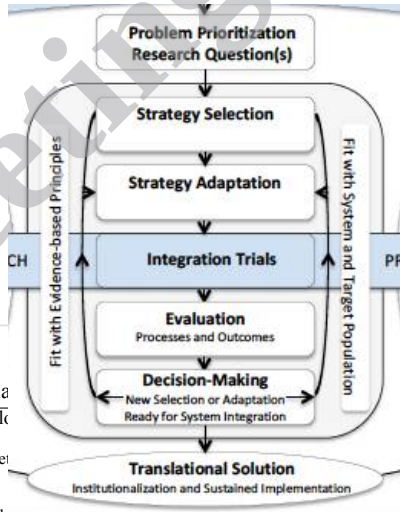
Carilion Healthy Lifestyle Study

Integration Trial



- Quasi Experiment
  - 3 Regions
  - 2 received 1, 2 hour CME
  - 1 received CME plus, 1 month, 3 month, 6 month, and 12 month follow-up integrated in regular staff meetings
- Intervention region purposefully selected to not be health system 'hub' region

Carilion NRV Care Coordinator Action Pla

Why do we think it is important to help our patients l

- To improve the health of patients and the community
- To help prevent and manage chronic diseases, such as diabe
- To improve patients' quality of life and happiness
- To improve patients' self-confidence
- To provide motivation and accountability for patients to hel

Our plan to engage patients in the Healthy Lifestyles program will be:

- Recruit **13** patients over the next month.
- Recruit **40** patients over the next 3 months.
- Recruit **79** patients over the next 6 months.
- Recruit **157** patients over the next 12 months.

What are our **3** biggest obstacles that could get in the way of achieving our goal?

1. Time—both to fit in 30-45 minute sessions and interruptions during sessions
2. Provider Support
3. Patient Commitment

What can you do to get past these obstacles? (Write 3 strategies for each obstacle)

Time:
1. Schedule during time when providers are not seeing patients (e.g., 1-1:45)
2. Block of protected slots on schedule
3. Schedule provider 'drop-offs' at another time so they don't interrupt sessions

Provider Support:
1. Highlight role of changes in weight and related outcomes on score card indicators
2. Using weekly provider meetings to provide education and share program fliers
3. Schedule provider 'drop-offs' at another time so they don't interrupt sessions
4. Share success stories with providers
5. Conduct one-on-one meetings with providers

Patient Commitment
1. Use program contract
2. Write BMI on schedule
3. Send patient a letter
4. Make the sessions convenient

What tools do we have that can help us meet our goals?

People who will support us: Other care coordinators; care coordinator leadership; weight loss program partners.
Materials that can help: Workbook, lesson plans, call scripts, program evaluations
Resources that we can use: Clinic space, appendices from workbook

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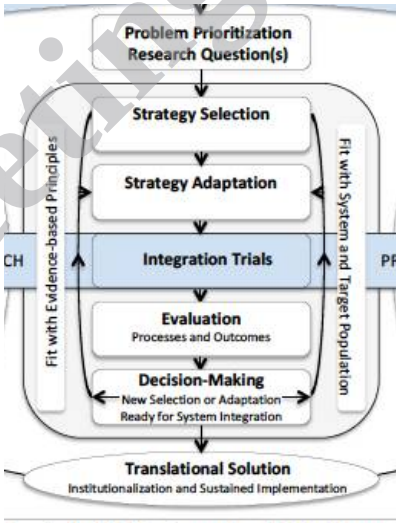
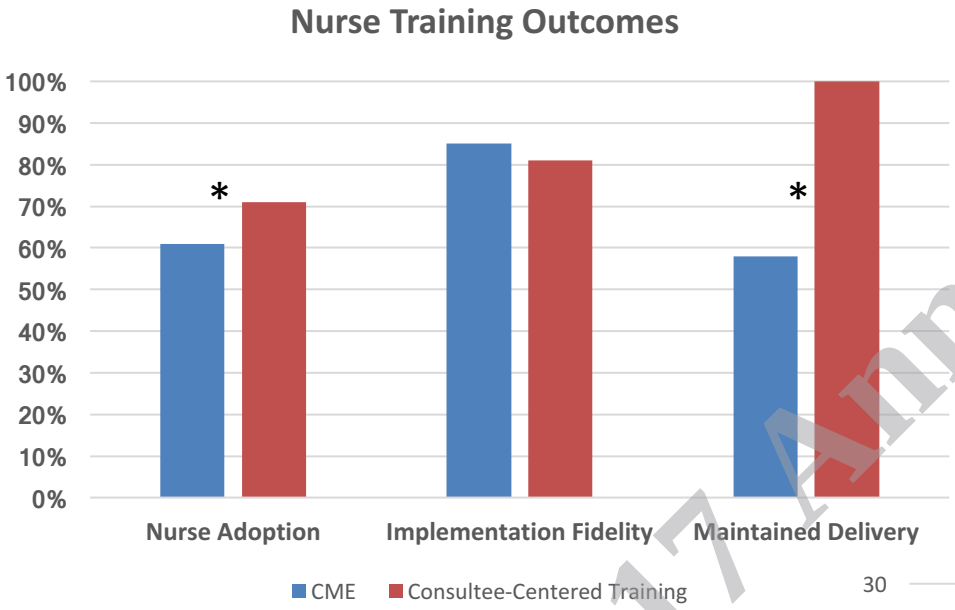
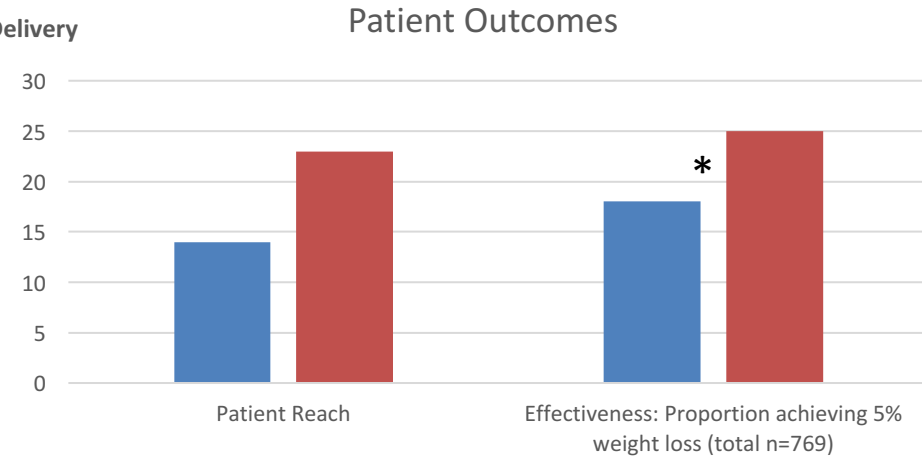
Carilion Healthy Lifestyle Study

Evaluation







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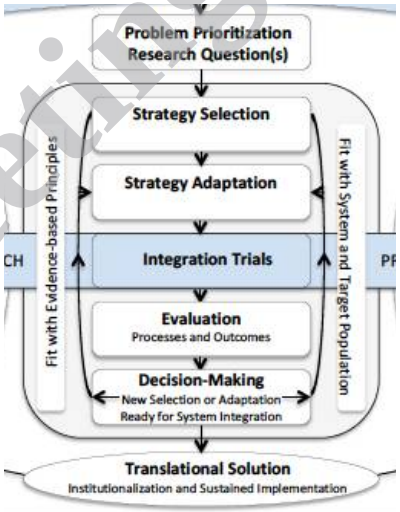
Decision Making



Clinical intervention

- Effective and feasible
- Additional program adaptations needed
- Changes to EHR coding would improve the efficiency of reporting
- **Decision to maintain implementation and continue to scale across clinics.**

Implementation Strategy

- Improved adoption, reach, and sustainability… an proportion of patients achieving a clinically meaningful weight loss (at 1 year)
- Future training may need adaption to focus on patient engagement and retention strategies
- **Training facilitator needed—and job description created, budgeted, posted and hired**

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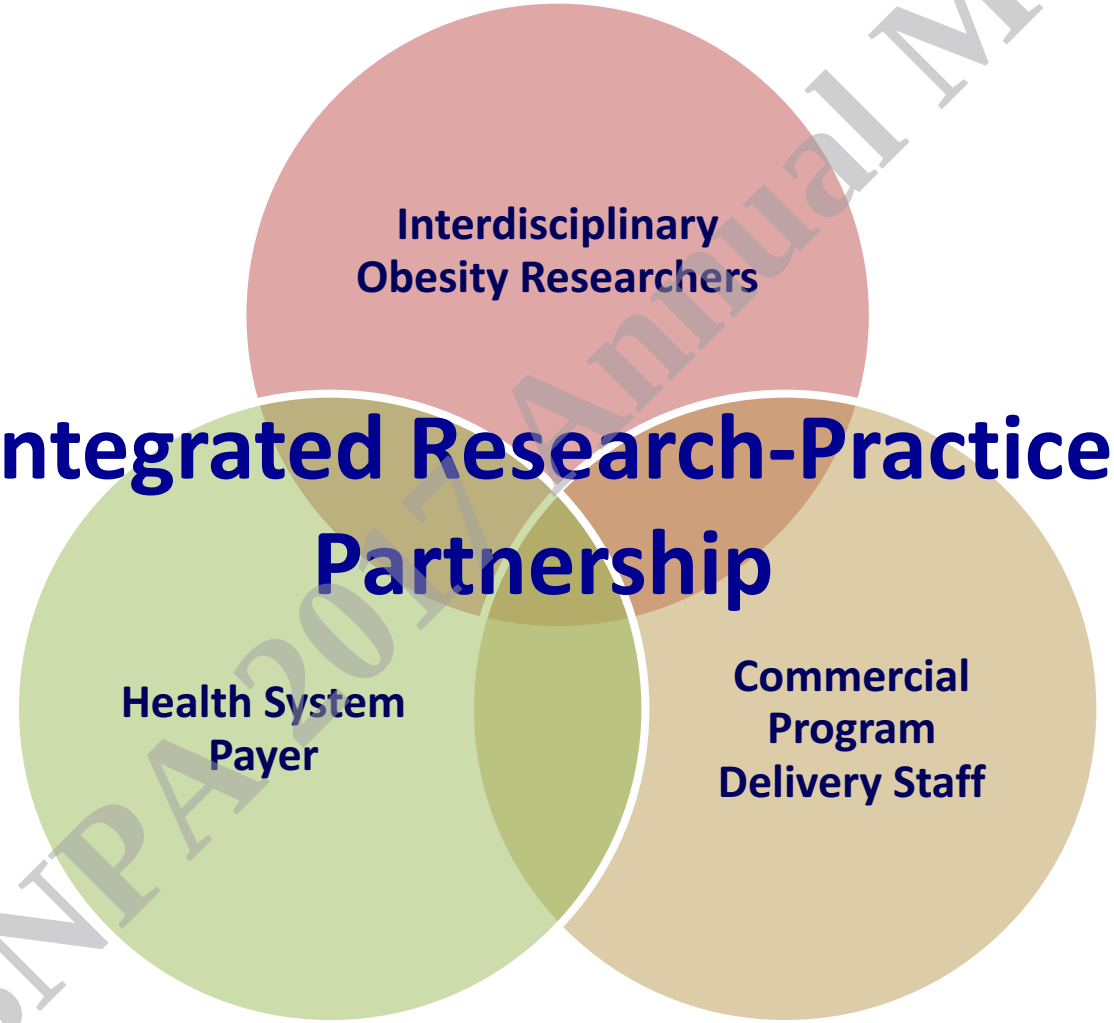
Moving outside of the healthcare setting (mostly)



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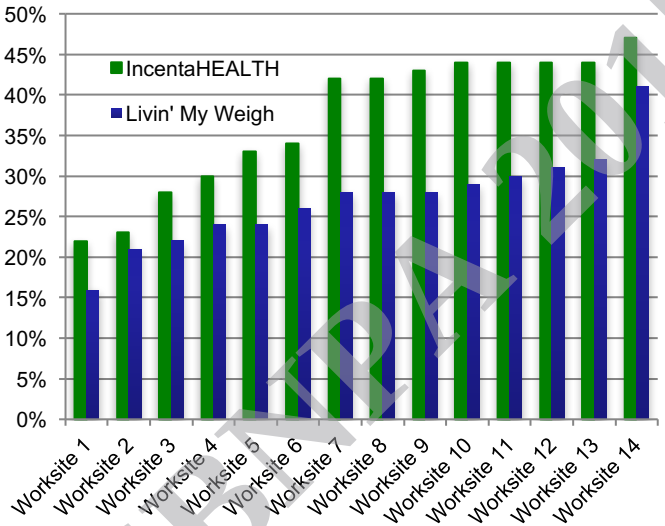
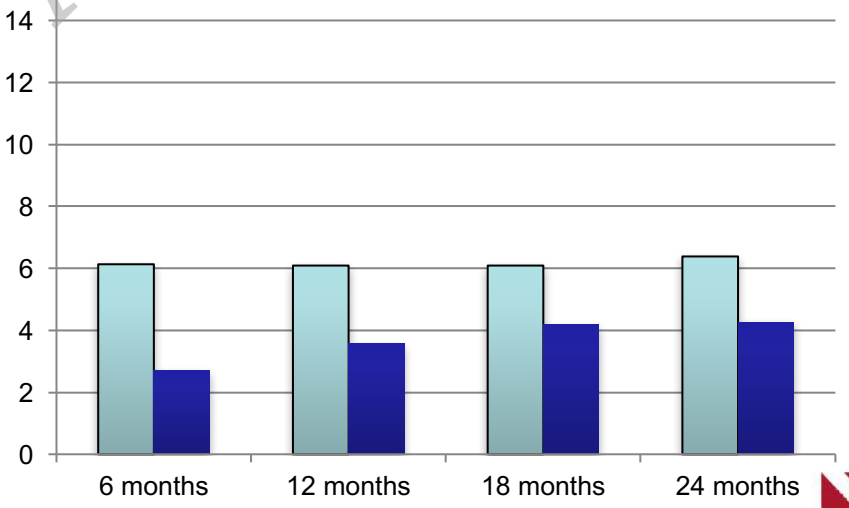
Early work of the partnership

Problem Prioritization & Research Questions

- Targeted email, internet, and financial incentive-based workplace weight loss program compared to a primarily self-guided, informational intervention without incentives.
- 28 worksites, ~6400 employees
- Significant impact on reach; non-significant difference in proportion of overweight and obese employees that lost 5% of initial body weight





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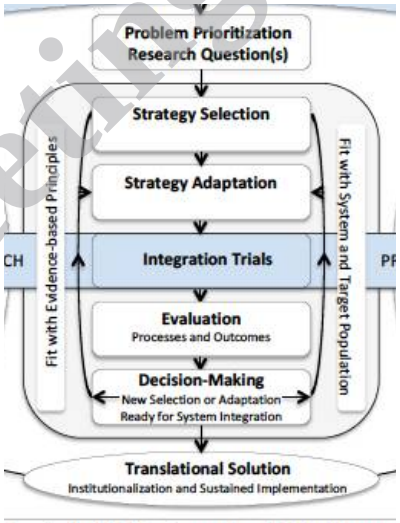
Weigh and Win

Problem Prioritization & Research Questions



- Problem Prioritization
  - High prevalence of obesity (even in Colorado).
  - Community benefit goal of health systems.
  - Looking for scalable interventions
- Research Questions
  - How many people will participate in an incentive, internet, and community-based weight loss program?
  - What proportion will lose a clinically meaningful amount of weight and at what cost?

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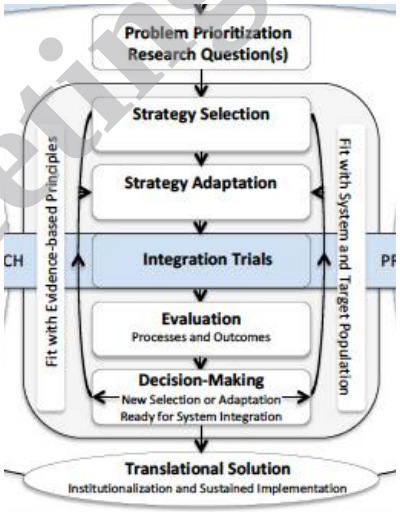
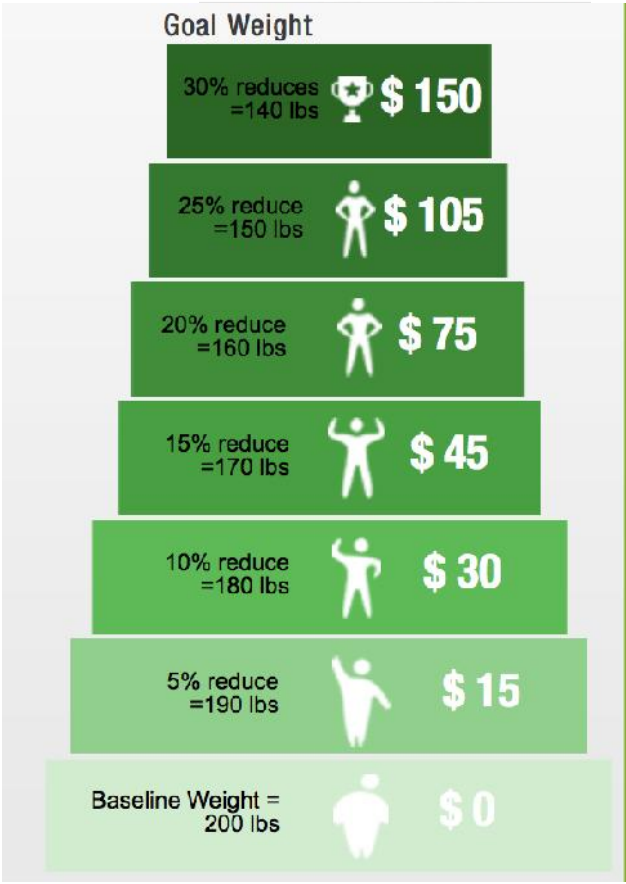
Weigh and Win

Strategy Selection & Adaptation

- Strategy selection
  - Social cognitive theory targeted approach to behavior change.
  - Light environmental intervention (marketing/kiosks)
  - Behavioral economics to improve reach ($)
- Strategy Adaptation
  - Community marketing rather than worksite.
  - Incentive amounts changed slightly.
  - Kiosks in community settings rather than workplaces





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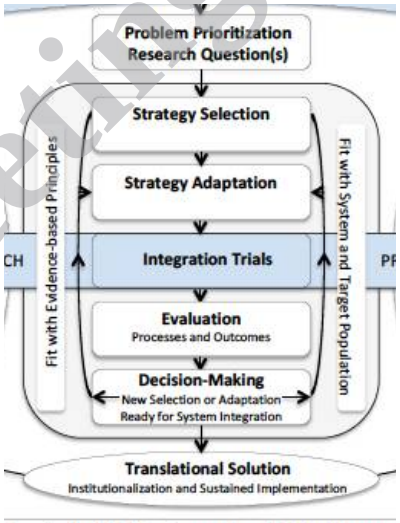
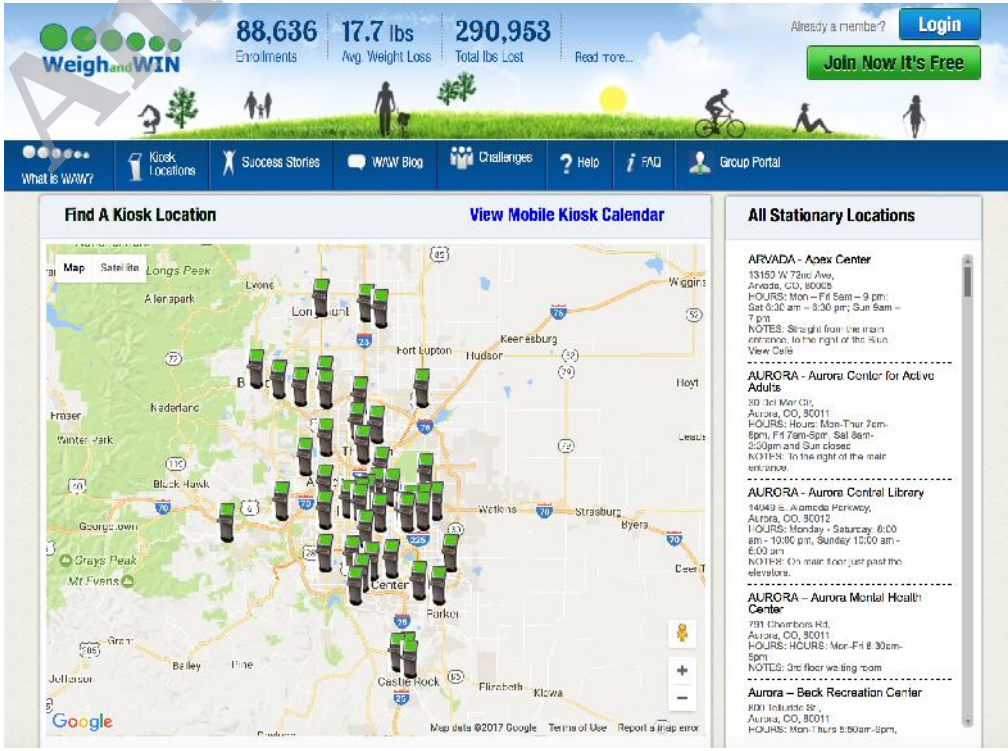
Weigh and Win
Integration Trial



- Longitudinal Quasi-Experimental without Control
  - Objective assessment of weight
  - Partnership developed outcomes



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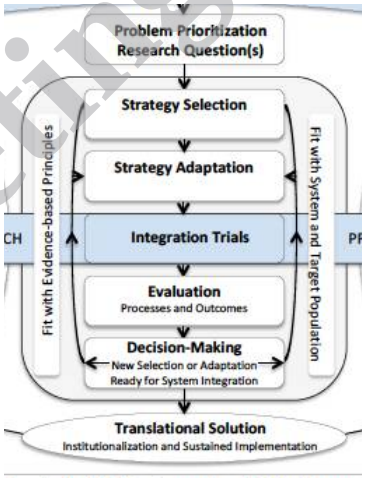
Weigh and Win

Evaluation



- 40,308 (79% female; 73% white) between 2011 and 2014
  - Ave Age: 43.9 (SD=13.1)
  - Ave BMI: 32.3 (SD=7.44)
  - Cost per participant $62.50 (BMI<25); $71.50 (BMI>25)
- Weight Loss: Using baseline-value-carried-forward analysis
  - 2.1kg (SD=6.47)
  - 46% of participants losing weight
  - 27% lost 3% of initial body weight
  - 19% lost 5% of initial body weight
  - $373 per 5% weight loss
- African American participants vs Non African American participants:
  - 37% more likely to lose 3% body weight
  - 38% more likely to maintain that WL for > a year
  - $272 per 5% weight loss

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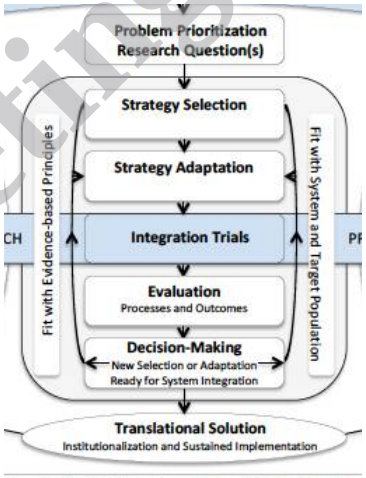
Weigh and Win

Decision Making



- Consideration for continued funding Weigh and win:

  (a) demonstrated broad reach and may contribute to reducing health disparities experienced by African Americans

  (b) had a cost per participant that rates favorably against other commercial weight loss programs

  (c) the costs per participant that achieved a clinically meaningful weight loss appear to be modest

- Conclusion was sustained funding for the initiative.

Estabrooks et al., 2017

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Co-production of evidence is promising for improving practice and participant outcomes.

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Potential active ingredients of the success of co-production of research

- Co-production models typically result in:
  - Establishing or using existing monitoring and evaluation systems
  - A focus on resources and costs
  - Engaged implementers and systemic decision makers
  - Tailoring the an approach to the local context
  - Systematic use of evidence from practice and research
  - Infrastructure to support implementation
  - Systemic ownership, initiative champions

Milat et al. Narrative Review of Models and Success for Scale Up, 2012

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View All D&I Models

The list of all D&I Models and their characteristics. You can compare up to five models by selecting the check box next to the model name. Additional information on each model can be found by clicking on the Description link under each Model name.

Compare Models

	Sort	Sort	Sort						Sort	Sort	
	Model	D &/or I	Construct Flexibility	Socio-Ecological Levels					Field of Origin	# Times Cited	Rating
				Individual	Organization	Community	System	Policy			
☐	Consolidated Framework for Implementation Research Description	I-Only	4		O	C			Health services	91	
☐	Diffusion of Innovation Description	D-Only	1	I	O	C			Agriculture	39,364	
☐	Interactive Systems Framework Description	D=I	2	I	O	C	S		Violence prevention	116	
☐	RE-AIM Framework Description	D=I	4	I	O	C			Public Health	728	

Compare Models Restore Full List

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The issue of adaptation

- The adaptation process:
    - When to adapt and when to re-invent?
    - Can active ingredients be adapted?
    - How practitioner intuition can be integrated and assessed with more flexible program structures and how does that relate to fidelity to even a re-invented intervention approach?

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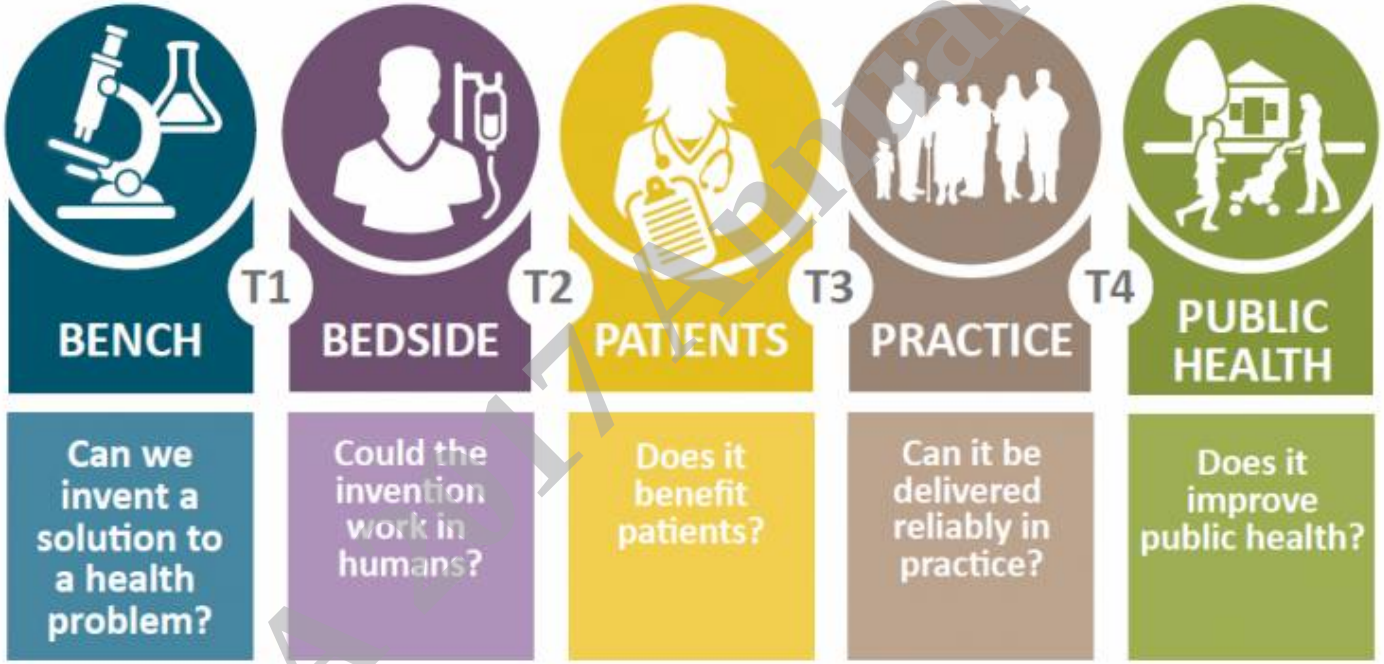
Translation Science



http://iims.uthscsa.edu/community.html Institute for Integration of Medicine and Science
University of Texas Health Sciences Center, San Antonio

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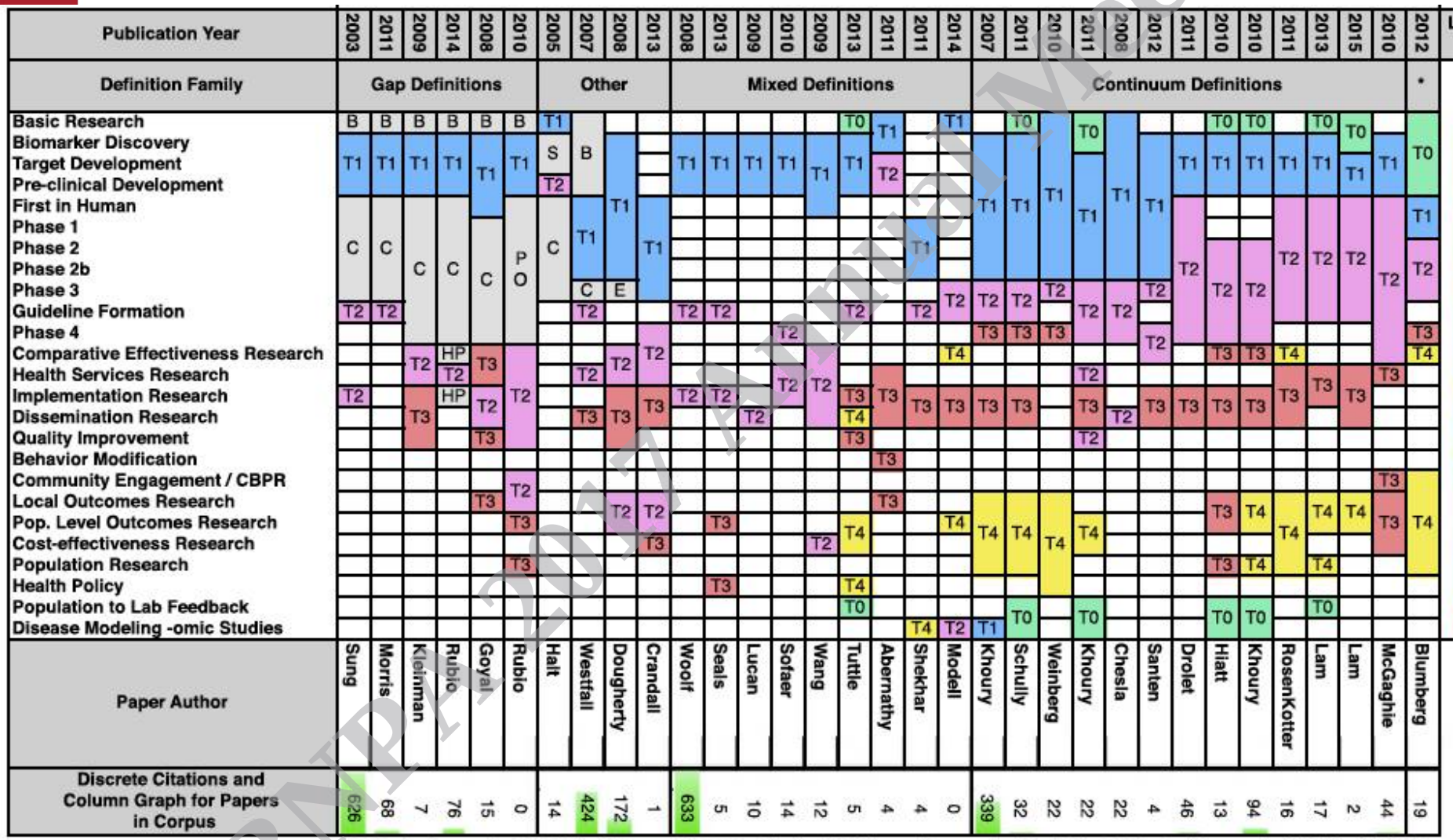
Defining Types of Translational Science



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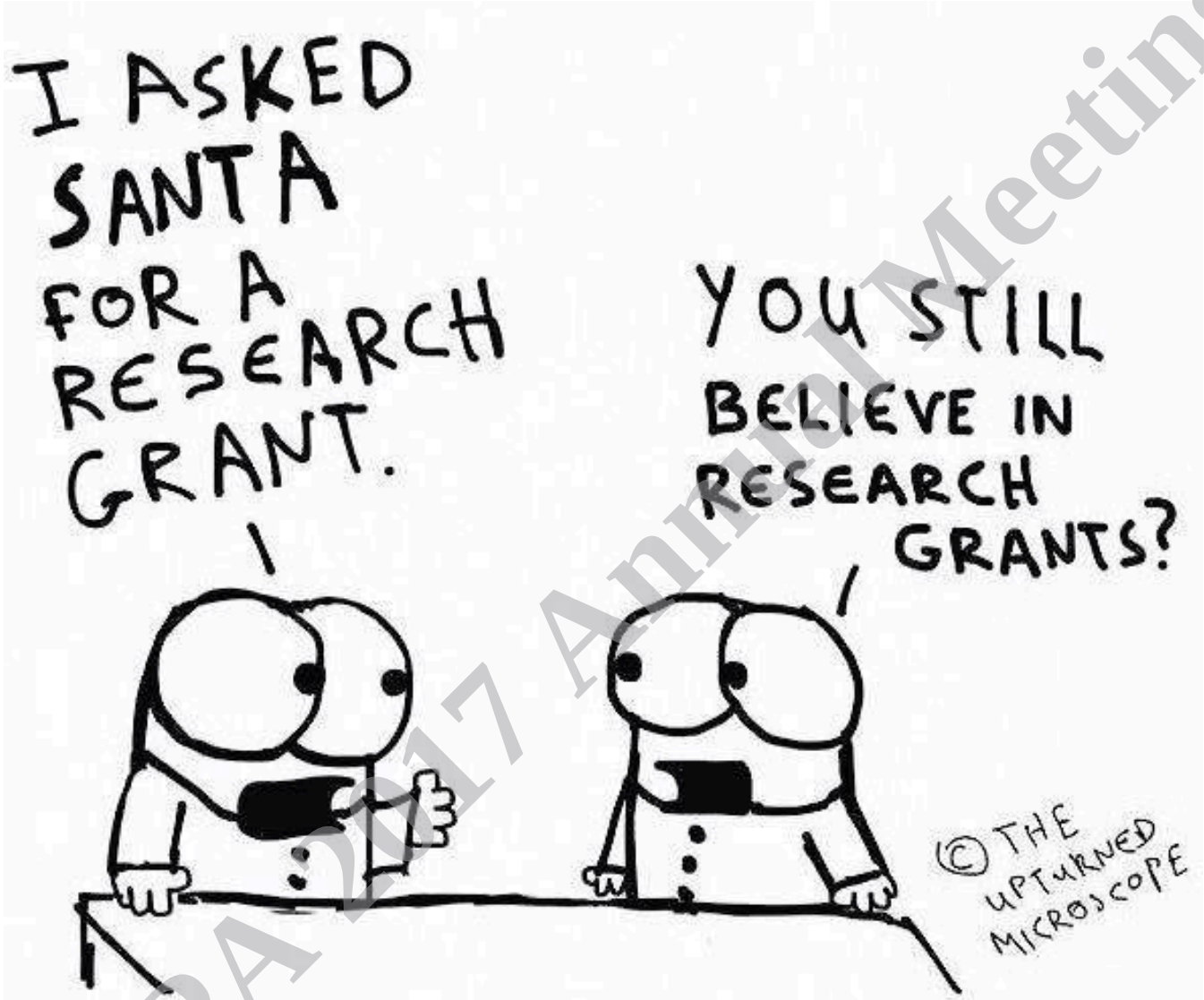

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What was the message?

- *Current knowledge translation, dissemination, implementation, and scalability research is struggling due to an over-reliance on evidence-based interventions relative to evidence-informed principles.*
- *Co-production of evidence is promising for improving practice and participant outcomes.*
- *Ideas for moving research in translational science forward*
- *A call to action for more clearly defining this area of research within the broader spectrum of translational science*

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Acknowledgements

- The partners whose work I shared in the talk
  - Kansas State Cooperative Extension
  - Carilion Clinic Dept of Family and Community Medicine and the Chronic Care Coordination Leadership and Nurses
  - Kaiser Permanente Colorado
  - IncentaHealth

- Our research team and students (Gwenn Porter and Gina Schweiger)
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