Bridging Research and Practice

Models for Dissemination and Implementation Research

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Appendix A

Categorization of dissemination and implementation models for use in research studies

Socio-ecological level											
Model	D and/or I	Construct flexibility	System	Community	Organization	Individual	Policy	Field of origin	Studies that use the model (Reference #)	Number of times model has been cited	Citations (Reference#)
Diffusion of Innovation	D-only	1		Х	Х	Х		Agriculture	1-8	39,364 ^b	9
RAND Model of Persuasive Communication and Diffusion of Medical Innovation	D-only	1		х	х	x		Medical information: technology assessment	10	56	11
Effective Dissemination Strategies	D-only	2		Х	Х	Х		Nursingresearch		24	12
Model for Locally Based Research Transfer Development	D-only	2		х	х			Local health and social service delivery agency		50	13
Streams of Policy Process	D-only	2	Х	Х	Х		Х	Political science	14-16	8,091°	17, 18
A Conceptual Model of Knowledge Utilization	D-only	3	х	х			х	Knowledge utilization in public policy		52	19
Conceptual Framework for Research Knowledge Transfer and Utilization	D-only	3			Х			Workplace health and safety	20	32	21
Conceptualizing Dissemination Research and Activity: Canadian Heart Health Initiative	D-only	3		х	Х			Public health systems		31	22, 23
Policy Framework for Increasing Diffusion of Evidence- Based Physical Activity Interventions	D-only	3	х	Х	X		Х	Public health: health behavior - physical activity	-	54	24
Blueprint for Dissemination	D-only	4		х	х			Quality of health care		6	25
Framework for Knowledge Translation	D-only	5		Х	Х	Х		Knowledge translation		113	26
A Framework For Analyzing Adoption of Complex Health Innovations	D>I	2	х	х	х	х		Health systems	27-32	34 ^d	33, 34
A Framework for Spread	D>I	2		х	Х			Veteran affairs healthcare access	35	32	36, 37
Collaborative Model for Knowledge Translation Between Researchand Practice Settings	D>I	2			х	х		Clinical healthcare settings		30	38
Coordinated Implementation Model	D>I	2			Х	Х		Health care: obstetric		111	39

So cio-ecological level											
Model	D and/or I	Construct flexibility	System	Community	Organization	Individual	Policy	Field of origin	Studies that use the model (Reference #)	Number of times model has been cited	Citations (Reference #)
								care			
Model for Improving the Dissemination of Nursing Research	D>I	2		Х	Х	Х		Nursingresearch		49	40
Framework for the Dissemination & Utilization of Research for Health-Care Policy & Practice	D>I	3		х	х	Х		Health policy and clinical decision-making	41-44	125	45, 46
Framework of Dissemination in Health Services Intervention Research	D>I	3	Х	х	Х			Health services		44	47
Linking Systems Framework	D>I	3		Х	Х	х		Public health: health promotion	-	29	48
Marketing and Distribution System for Public Health	D>I	3	Х	Х	Х	х		Public health		_	49
OutPatient Treatment in Ontario Services (OPTIONS) Model	D>I	3		х	х	х		Mental health: substance abuse	50, 51	57	52
A Conceptual Model for the Diffusion of Innovations in Service Organizations	D>I	4		х	х			Health services	53, 54	1190	55
Health Promotion Research Center Framework	D>I	4	Х	Х	Х		х	Public health: health promotion	-		56
Knowledge Exchange Framework	D>I	4	х	х	х	х		Knowledge transfer	57	27	58-60
Research Knowledge Infrastructure	D>I	4		х	х	x	х	Knowledge transfer in health and economic/social research organizations	61	111, 437e	62-65
A Convergent Diffusion and Social Marketing Approach for Dissemination	D>I	5		х	х			Public health: physical activity	66	56	67, 68
Framework for Dissemination of Evidence-Based Policy	D>I	5		Х	Х	Х		Public health			69
Health Promotion Technology Transfer Process	D=I	1		X	Х			Health promotion technology transfer		54	70
Real-World Dissemination	D=I	1		х	Х			Health care		690	71, 72
A Framework for the Transfer of Patient Safety Research into Practice	D=I	2	х		х			Patient safety	73	16	74
Interacting Elements of Integrating Science, Policy, and Practice	D=I	2	х	х				Dissemination and implementation in health research			75
Interactive Systems Framework	D=I	2	х	х	х	х		Violence prevention	76-80	116	81
Push-Pull Capacity Model	D=I	2	х	х	х		Х	Physical activity	82, 83	39	84
Research Development Dissemination and Utilization Framework	D=I	2	х	х	х	Х		Research utilization		420	85
Utilization-Focused Surveillance Framework	D=I	2	Х	Х	Х			Public health		67	86
"4E" Framework for Knowledge Dissemination and Utilization	D=I	3		х	х	Х		Aging and mental health	87-90	35	91, 92
Critical Realism & the Arts Research Utilization Model (CRARUM)	D=I	3			х	х		Clinical practice guidelines	-	27	93
Davis' Pathman-PRECEED Model	D=I	3		Х	Х	Х		Public health and medicine		339 ^f	94-96

Socio-ecological level											
Model	D and/or I	Construct flexibility	System	Community	Organization	Individual	Policy	Field of origin	Studies that use the model (Reference #)	Number of times model has been cited	Citations (Reference #)
Dissemination of Evidence-based Interventions to Prevent Obesity	D=I	3		Х	Х			Obesity prevention	_	-	97
Knowledge Translation Model of Tehran University of Medical Sciences	D=I	3			х	х		Health science	98, 99	13	100, 101
Multi-level Conceptual Framework of Organizational Innovation Adoption	D=I	3			X	х		Marketing and management in innovation adoption and technology acceptance	102, 103	388	104
Ottawa Model of Research Use	D=I	4		Х	Х	Х		Health care	105-110	147	111, 112
The RE-AIM Framework	D=I	4		Х	Х	Х		Public health	113-116	728	117
The Precede-Proceed Model	D=I	5		х	Х	х		Health	118-121	391	96
Facilitating Adoption of Best Practices (FAB) Model	I>D	2		Х	Х			Medicine	_		122
A Six-Step Framework For International Physical Activity Dissemination	I>D	3	х	х	х	Х	х	Physical activity		27	123
Pathways to Evidence Informed Policy	I>D	3	Х	х	Х	х	х	Public health		166	124
CDC DHAP's Research-to-Practice Framework	I>D	4		Х	Х			HIV/AIDS prevention		77, 43g	125-130
Practical, Robust Implementation and Sustainability Model (PRISM)	I>D	4			х	Х		Public health	131	22	132
Active Implementation Framework	l-only	3		х	х	х		Any domain	133, 134	904	135, 136
An Organizational Theory of Innovation Implementation	I-only	3			Х			Worksite health promotion	137	28	138
Conceptual Model of Implementation Research	l-only	3	X	Х	Х	Х		Mental health services	139	71	140
Implementation Effectiveness Model	l-only	3			Х	Х		Management	141-146	830	147, 148
Normalization Process Theory	l-only	3	Х	х	Х	х		Health care and medicine	149-154	53	155-157
Promoting Action on Research Implementation in Health Services (PARIHS)	I-only	3		х	х	х		Health services	158-163	590	164-166
Pronovost's 4E's Process Theory	l-only	3		Х	Х	Х		Health care and medicine	167, 168	91	169
Sticky Knowledge	l-only	3		х	х	х		Strategic management and medicine	170	19, 4377 ^h	171, 172
Consolidated Framework for Implementation Research	l-only	4		Х	Х			Health services	173-176	91	177, 178
Replicating Effective Programs Plus Framework	l-only	4		x	x			Clinical and health services intervention in community-based organizations	179, 180	32	181
Availability, Responsiveness & Continuity (ARC): An Organizational & Community Intervention Model	l-only	5		х	х			Mental health treatment in community settings	182	89	183, 184
Conceptual Model of Evidence-Based Practice Implementation in Public Service Sectors	l-only	5		Х	Х			Public sector services	-	18	185

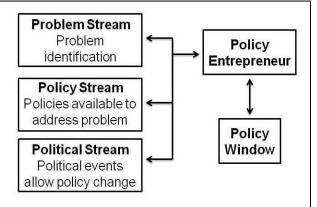
Note: Construct flexibility scale: 1 (broad) -5 (operational).

- aln most cases, the value shows the number of times a model was cited based on the earliest reference to the model, which serves as an imperfect proxy to gauge use of the model in research studies. In some cases, exceptions were made to this rule based on the judgment of the authors. These citation numbers were acquired on February 7, 2012.
- ^bThis citation number is provided for the 1995 edition (which first appears in Google Scholar) and not the edition that is cited.⁹
- ^c This citation number is provided for the 1984 edition (the first edition)¹⁷ and not the most recent edition.¹⁸
- ^d This citation number is provided for the 2010 reference,³³ which is when the model was first published. The earlier citation³⁴ is included to provide some background information on the development of the model.
- eThese are the citation numbers for the 2003 article⁶⁵ (437 citations) and the 2006⁶⁴ (111 citations) article. These were selected because the authors felt these articles best explained the model.
- [†]This citation number is provided for the 2003 reference.⁹⁴The other included references were used as the basis of the model that is described in the 2003 reference.
- g These are the citation numbers for the 2006 Collins 125 (77 citations) and 2000 Neumann 127 (43 citations) articles. These were selected because the authors felt these articles best explained the model.
- ^h Citation numbers for both the Elwyn¹⁷¹ (19 citations) and Szulanski¹⁷² (4377 citations) references are provided. Both were included because the authors felt the references were sufficiently different that the citation numbers for both would be useful.
- D, dissemination; DHAP, Division of HIV/AIDS Prevention; 4E, exposure, experience, expertise, embedding; I, implementation; RAND, research and development; RE-AIM, reach, effectiveness, adoption, implementation, and maintenance

Appendix B

Case Study 2: Streams of policy process (obesity prevention legislation) 15,18

Model Background: The Streams of Policy Process model argues that policy change is influenced by three major process streams: (1) Recognition that a policy problem exists that needs to be addressed (the problem stream); (2) Development, refinement and vetting of policy proposals purporting to correct the policy problem (the policy stream); and (3) The flow of political events through which policy changes are effected (the political stream). These streams operate independently and an issue is most likely to arise on the policy agenda when there is an intersection, or 'coupling,' between the streams. When coupling occurs it creates a window of opportunity for policy action. Although coupling is often unpredictable, policy entrepreneurs often look for or create windows of opportunity for action.



Study: Arkansas's Act 1220 of 2003: School-based Childhood Obesity Legislation

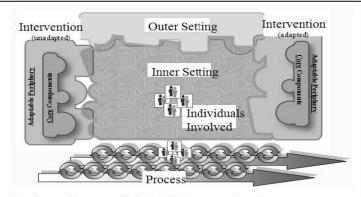
Study Background: Arkansas policy-makers recognized that halting the obesity epidemic necessitated progressive steps to outpace increasing disease rates. With the passage of Act 1220 in 2003, Arkansas enacted comprehensive legislation to combat childhood obesity. Act 1220 mandated immediate action while establishing the mechanisms for short- and long-term change at both state and local levels. This study explored factors that allowed the issue of childhood obesity to rise to the forefront of an overburdened legislative agenda and garner political attention resulting in legislative adoption.

Use of Policy Streams: This study used the Streams of Policy Process to guide the analysis. Factors that enabled the passage of Act 1220 were mapped onto the constructs of the analysis framework. One informant noted that public health leaders had for many years presented annual updates to legislators about the burden of obesity in Arkansas (problem stream). Another one noted that "the Act represented the culmination of a longer developmental process around the policy options available to the legislature" (policy stream). Recently, the Arkansas Legislature had commissioned the Arkansas Department of Health to establish an Obesity Task Force and Arkansas legislators were presented with a health resolution calling on them to take personal action and serve as role models in the state's efforts to combat childhood obesity. (political stream). With the support of two prominent politicians who had recently suffered from obesity related health problems, one of which served as a policy entrepreneur, a policy window for childhood obesity was opened.

Appendix C

Case Study 3: Consolidated framework for implementation research (substance use disorder treatment) 173,177

Framework Background: The Consolidated Framework for Implementation Research (CFIR) was created to combine multiple implementation theories into one framework. The CFIR is composed of five major domains: intervention characteristics, outer setting, inner setting, characteristics of the individuals involved, and the process of implementation. Each domain contains several constructs. For example, the intervention domain has the following constructs: intervention source, evidence strength and quality, relative advantage, adaptability, trialability, complexity, design quality and packaging, cost.



Study: Continuing Care in Substance Use Disorder Treatment

Study Background: Continuing care following substance use disorder treatment is associated with improved outcomes. Evidence-based interventions (EBI) for continuing care have been developed, but there are large gaps between what is delivered in actual clinical care and these EBIs. The CFIR was used to review the literature on continuing care treatment and monitoring to assess the barriers to use of EBIs and to provide recommendations on how to overcome identified barriers.

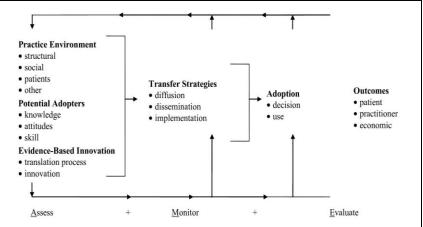
<u>Use of CFIR</u>: This study used the CFIR to frame the recommendations for researchers and practitioners on how to increase use of continuing care EBI. Using the intervention domain as an example, the authors' determined the strengths of continuing care interventions were the quality of the evidence base and the adaptability of the intervention. However, the intervention was hindered by its complexity. Furthermore, implementation was made difficult by the lack of information on the relative advantage of various EBIs to each other, the cost-effectiveness of each EBI, and the determination of core vs. adaptable components of each EBI. The authors therefore suggested researchers should develop studies to shed more light on these aspects of the intervention.

Appendix D

Case Study 4: Ottawa model of research use (technology use in government agencies)106,108,111,112

Framework Background: The Ottawa Model of Research Use (OMRU) was developed to be used by both policymakers and researchers. The OMRU contains six constructs that were determined to be central to the process of research use: practice environment, potential adopters, evidence-based innovation, transfer strategies, adoption, and outcomes. These constructs are connected to each other through the processes of assessment, monitoring, and evaluation.

<u>Study</u>: Geographic Information System Technology Use in Local Ontario Early Years Centres



Study Background: Ontario Early Year Centres (OEYCs) are agencies that provide services to young children and their parents/caregivers. The OEYCs collect rich, context-specific data, including data collected by geographic information system (GIS) mapping software, to inform decision-making and better serve clients. However, use of data, and GIS data specifically, by agency leaders has been inconsistent. Researchers investigated the barriers to implementation of mapping software as tools to support decision-making.

<u>Use of OMRU</u>: The researchers leading this study planned a two-phase qualitative study. The first phase focused on assessment by exploring how the culture of OEYCs influences perceptions, beliefs, and attitudes towards mapping programs. Using the OMRU, the investigators grouped identified barriers into the three constructs of assessment: innovation (prohibitive cost, limitations of previous mapping software, and expectations of the program); potential adopters (attitudes, skills related to interpreting maps, confusion on roles of managers vs data analysts); and environment (accurate data collection, confidentiality concerns, and usefulness of required reported data). The second phase of the study evaluated the use and impact of mapping software during and after implementation of interventions tailored to address the identified innovation, adopters, and environment-related barriers. This second phase encompassed the remainder of the OMRU model by implementing an intervention to increase knowledge transfer and assessing outcomes, in terms of increased adoption by OEYC managers and better provision of services to OEYC clients.

Appendix E

Case Study 5: Interactive system framework (teen pregnancy prevention)78,81

Framework Background: The Interactive System Framework (ISF) was originally developed to be used by different types of stakeholders (e.g., funders, practitioners, researchers) to better understand the needs of all stakeholders and systems. The ISF identifies three systems: the Prevention Delivery System which implements innovations; the Prevention Support System which provides training, technical assistance (TA) or other support to users; and the Prevention Synthesis and Translation System which distills information and translates it into user-friendly formats. Each of these activities is necessary for the movement of innovations into widespread prevention practice at the community level.

<u>Study</u>: Promoting Science-based Approaches to Teen Pregnancy Prevention project (PSBA)

Study Background: The PSBA program was a multi-site, capacity-building effort that aimed to assist local prevention partners in the use of science-based approaches (SBA) to prevent teen pregnancy. ISF was adopted to allow for specific and strategic planning about what capacities were needed at the local level and to develop a framework for systematically building these capacities.

Measures: ISF was used to inform the evaluation and its measures for this project. Evaluation questions were developed to document and evaluate the process and outcomes of the PSBA project. There was a particular focus placed on how well the ISF-inspired, capacity-building model improved prevention practice among selected local partners.

<u>Use of ISF</u>: PSBA used all three systems of the ISF to facilitate practice improvements. The PSBA Prevention Delivery System included all local prevention partners who agreed to receive intensive TA from the state and regional grantees. The PSBA Prevention Support System included efforts made by CDC's national, regional,

Funding Implementing Prevention—Prevention Delivery System General Capacity Innovation-Specific Capacity Use Use Supporting the Work-Prevention Support System Macro Climate Policy General Capacity Innovation-Specific Building Capacity Building Distilling the Information-Prevention Synthesis & Translation System Synthesis Translation Existing Research and Theory Funding **PSBA Prevention Delivery System:** Local Partners Implementing Prevention-Communities build capacity by using PSBA-GTO to plan, implement, and evaluate teen pregnancy prevention efforts. General Capacity SBA-Specific Use Capacity Use **PSBA Prevention Support System:** Supporting the Work of Local Partners-Macro State, regional, & national grantees build their own capacity and provide support to local partners to use PSBA-GTO. Climate Policy General Capacity SBA-Specific Capacity Building PSBA Prevention Synthesis & Translation System Distilling the Process and the Science-PSBA-GTO developed to provide a systematic process for local partners to use a science-based approach in their teen pregnancy prevention work Synthesis Translation Existing Research and Theory

and state partners to strengthen their own general organizational capacity; build SBA- specific capacity to provide training and TA; and assist local partners. The PSBA Prevention Synthesis and Translation System consisted of creating an accessible and comprehensive manual called Promoting Science-based Approaches to Teen Pregnancy Prevention using Getting to Outcomes (PSBA-GTO).

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