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Disseminating Policy and Environmental Change Interventions: Insights from Obesity Prevention and Tobacco Control

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Abstract

Purpose—Evidence-based interventions are increasingly called for as a way to improve health behaviors such as tobacco use, physical inactivity, and poor diet. Numerous organizations are disseminating interventions that target individual-level behavioral change. Fewer are disseminating interventions that target the policy and environmental changes required to support healthier behaviors. This paper aims to describe the distinct features of policy and environmental change and the lessons learned by two Centers for Disease Control and Prevention-funded dissemination projects, the Center for Training and Research Translation (Center TRT) and Counter Tobacco.

Methods—Both Center TRT and Counter Tobacco have conducted formative research with their target audiences to customize dissemination to address practitioner-reported needs and preferences. The Centers' have developed the following approach to disseminating policy and

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Jennifer Leeman and Alice Ammerman have no conflicts of interest or financial disclosures to report. Allison Myers and Kurt Ribisl receive compensation as the Deputy Director and Executive Director, respectively, of Counter Tools, a nonprofit organization providing software as a service, training and technical assistance to communities addressing point of sale tobacco control and obesity issues.

environmental change interventions: (1) Identify the best available evidence rather than waiting for the best possible evidence, (2) disseminate menus of broad intervention strategies, (3) provide implementation guidance, (4) incorporate stories from the field, (5) build practitioners' capacity, and, (6) integrate dissemination into practitioners' existing professional and social networks. In 2012, over 26,000 unique visitors accessed the Center TRT website and downloaded over 12,400 documents. The Counter Tobacco website has had 10,907 unique visitors since its launch in August 2011, and the number of visitors is increasing rapidly.

Conclusions—Both Centers have had success reaching their intended audiences. Research is now needed to assess the extent of practitioners' use of disseminated recommendations, guidance, and tools in practice and the impact of the resulting interventions.

Keywords

Dissemination; obesity prevention; tobacco control; public health; evidence-based practice; research translation

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The use of evidence-based interventions (EBI) is increasingly called for as a way to translate the United State's $100 billion annual investment in research into improvements in population health [1, 2]. EBIs that address health behaviors (e.g., tobacco use, physical inactivity, and poor diet) are particularly critical to preventing chronic disease and reducing morbidity and mortality [3-5]. In response to this need, numerous organizations are disseminating EBIs that target change at the level of the individual [6, 7]; far fewer are disseminating EBIs that target policy and environmental change. The extensive investment in individual-level EBIs has yielded only limited improvements in health behaviors [8]. To be successful, efforts to improve health behaviors must also include 'upstream' changes to create policies and environments that are supportive of healthier behaviors and "make individuals' default decisions healthy [9]." Policy and environmental change (P&E) interventions have the additional potential for broad reach, low per-person costs, and long-term sustainability [9,10]. Thus, a need exists for increased dissemination of EBIs that target public and organizational policies and improve physical, communication, and economic environments [11].

Current approaches to disseminating individual-level EBIs may be a poor fit with P&E interventions. Compare, for example, two interventions aimed at increasing physical activity, one is an afterschool program and the other a "complete streets" policy requiring all street construction to meet specified cyclist and pedestrian accessibility criteria. To implement the afterschool program, public health practitioners might select an EBI program (e.g., "Youth Fit for Life" [12]), partner with providers, and then adapt the EBI and implement it in practice. In contrast, to enact complete streets policy, those same practitioners would need to collaborate with colleagues in the departments of planning and transportation and enlist additional partners (e.g., local businesses, the YMCA) to advocate for a change to policy. The practitioners could not predetermine policy content or format (e.g., ordinance versus resolution). Instead, the policy would emerge over time, in response to collaborating agencies' and community partners' priorities, practices, and resources, as well as existing infrastructure [13]. And, unlike the physical activity program, the intervention implementation might continue indefinitely. As illustrated, the boundaries and

components of P&E interventions may be difficult to specify, raising questions about what constitutes a P&E EBI and how best to disseminate EBIs to guide practice.

This paper aims to describe the distinct features of evidence-based policy and environmental change interventions and the dissemination strategies developed by two Centers for Disease Control and Prevention (CDC)-funded projects, the Center for Training and Research Translation (Center TRT) and Counter Tobacco. The CDC funds the Center TRT to disseminate P&E interventions to promote physical activity, healthy eating, and breastfeeding and funds Counter Tobacco to disseminate interventions that counter tobacco product sales and marketing in the retail environment, also known as the point of sale (POS).

Distinct Features of P&E as Compared to Individual-Level Interventions

Several features of P&E interventions distinguish them from individual-level interventions and are central to identifying the best approaches to dissemination. The distinct features of P&E interventions are summarized in Table I and described in detail below.

Evidence for policy and environmental interventions is emerging

A robust and growing body of evidence supports the relationship between policy and environmental change and health behaviors, and the evidence base for effective P&E interventions is emerging rapidly [14-20]. In fact, the rapid emergence of evidence is one of the central challenges for those disseminating P&E EBIs [11, 21, 22]. Another challenge is the nature of much of the emerging evidence. Practitioners are leading much of the P&E intervention work, and quasi-experimental evaluations or post-hoc analyses are among the primary sources of evidence for intervention effectiveness.

Using point-of-sale (POS) tobacco marketing as an example, evidence clearly links POS marketing to tobacco use initiation, relapse, craving, and impulse purchases [14-18]. Evidence from a growing number of studies demonstrates that policy interventions may be effective at reducing POS marketing; however, most of this evidence is from observational studies of marketing before and after new policies are enacted [23].

Policy and environmental change are complex

P&E interventions function within complex systems comprised of diverse stakeholders engaging in multiple, inter-related activities across multiple levels [24, 25]. Because collaborating stakeholders represent diverse settings and sectors, they approach intervening with differing needs, resources, and values. Engaging and retaining stakeholders is central to effective P&E change [26-28] and requires the ongoing alignment of interventions with stakeholder priorities and with other system elements as the intervention and its implementation evolve over time [24, 29-32]. The complex, context dependent, and evolving nature of P&E interventions challenges disseminating organizations' efforts to identify their boundaries (e.g., where do they begin or end) or to standardize intervention activities and materials into a format that can be replicated by others.

To illustrate, public health practitioners might want to increase access to fruits and vegetables, and identify several relevant P&E EBIs (e.g., increasing availability within

existing retail settings, financing new retailer development, creating farm to work initiatives, etc.) [33]. Because practitioners require partners to promote and implement these interventions, they begin by engaging others who are central to the problem or its potential solutions. The specific intervention selected will emerge over time as partners collaboratively prioritize approaches. They might begin by working in retail settings because it aligns with partners' priorities and retailers are willing to participate. New federal- and state-level funding streams are among many factors that may determine the next approach that is adopted. As shown in this illustration, EBIs are just one element in P&E intervention planning, practitioners also need to incorporate an evolving configuration of system components, with attention to multiple levels of influence and to stakeholder priorities and resources [34].

Vested interests may resist P&E interventions

With individual-level interventions, those affected typically have the opportunity to decide whether they will participate or not, as in the case of smoking cessation or weight management interventions. P&E interventions, on the other hand, often affect people and organizations that never agreed to participate and may actively resist the change. Resistance may come from individuals, such as employees who resist new organizational policies prohibiting smoking at the worksite. Resistance may also come from organizations with vested interests, such as the beverage industry's resistance to New York City's regulations on the size of sugar-sweetened beverages [35]. To respond to resistance, practitioners may need to incorporate marketing and advocacy efforts into their intervention plan. They may also need to consider a variety of approaches to intervening so they might negotiate and compromise with potential resisters to design a "win-win" approach to intervening [36].

For example, an extensive evidence base supports the effectiveness of raising the cigarette excise tax at the state level to increase the price of tobacco products and thereby reduce tobacco use [37]. Given potential policymaker resistance to new taxes and industry concerns about lost revenue, practitioners may end up negotiating for alternative, non-tax approaches to raising prices, such as cigarette minimum price laws or bans on coupon redemptions and other price promotions [38].

Some policy and environmental change interventions have high start-up costs

Although, over the long term P&E interventions often have lower per person costs than individual-level interventions, they may require substantially more resources to get started. A weight management intervention may incur modest initial costs for staff time to plan and implement the intervention and then incur greater costs over time as providers assess, counsel, treat, and refer participants [39]. In contrast, publicly financing grocery store development in underserved areas requires extensive initial investment [40]. Although initial outlays are high, once built, the grocery stores should be self-sustaining and have broad and long lasting impact. Even when P&E interventions have relatively low implementation costs, as in the case of new zoning regulations for tobacco retailers, substantial investments may initially be required to promote their initial enactment and counter industry resistance.

Policy and environmental changes require distinct skill sets

As practitioners engage in more upstream interventions, they have to learn to work with non-traditional partners, such as retailors or farmers, and to navigate inter-relationships among local, regional, and state policy. They also need new tools and to learn new methods to engage stakeholders, counter resistance, assess environments, and analyze policy among others [41].

Disseminating Policy & Environmental EBIs: Lessons from Center TRT and Counter Tobacco

Since 2004, Center TRT has provided P&E interventions and training to public health practitioners working to prevent obesity nationwide. In 2012, over 26,000 unique visitors accessed the Center TRT website (www.centertrt.org) and downloaded over 12,400 documents. Counter Tobacco serves as the first comprehensive resource for local, state, and federal practitioners working to counteract tobacco product sales and marketing at the point of sale. The Counter Tobacco website (www.countertobacco.org) has had 10,907 unique visitors since its launch in August 2011, and the number of visitors is increasing rapidly, with more than twice as many unique visitors in the first three months of 2013 as compared to the same time period in 2012.

Both Center TRT and Counter Tobacco conduct formative research with their target audiences and customize offerings to address practitioner-reported needs and preferences. Center TRT's formative work has included input from an advisory board, focus groups, surveys, and key informant interviews [34, 42]. Counter Tobacco's formative research includes conversations with practitioners at national and regional meetings and input from an advisory group of academic and practitioner experts. Both projects have done usability testing with practitioners and process evaluations with site users. The strategies Center TRT and Counter Tobacco have developed for P&E dissemination are summarized in Table I and described in detail below.

1. Identify the best available evidence

Tobacco use, physical inactivity, and unhealthy dietary intake are high priority public health problems that require interventions targeting multiple risk factors, across multiple levels, and in a range of settings [43]. Practitioners cannot wait for researchers to generate the evidence base to support the full range of interventions needed to change population-level health behaviors. In response to this challenge, Center TRT and Counter Tobacco both focus on identifying “the best available evidence as opposed to waiting for the best possible evidence [44].” In addition to evidence from research studies and systematic reviews of the research literature, both projects include evidence from expert consensus on interventions with high likelihood of being effective based on theory, parallel evidence, or evidence from natural experiments [45]. In addition, both projects define evidence of effectiveness to include evidence of improvements in environments even in the absence of evidence of changes in behaviors and health status -- if those environmental changes have a strong, plausible causal link to changes in behaviors and health status. Both sites regularly revise recommended EBIs to remain current with the latest science.

To counterbalance the emergent nature of the evidence base, both projects build practitioners' capacity to evaluate their interventions' impact on environments. Practitioners' evaluation of their interventions is essential to assessing their effectiveness and to strengthening and sustaining interventions over time [46, 47].

2. Prioritize intervention strategies over programs

Organizations may disseminate EBIs in the formats of either *programs* or *strategies* [48]. The National Cancer Institute's Research Tested Interventions Programs and the CDC's Replicating Effective Programs initiatives both disseminate intervention *programs* [6, 7]. They identify "model programs" that have been demonstrated to be effective in one or more reasonably well-designed research studies and then disseminate them in a standardized format that practitioners might apply to replicate the EBI in their practice setting [49]. The intent of this approach is to provide a recipe that practitioners can follow, and programs typically include detailed guidance and materials to support implementation. Although practitioners may adapt programs to fit their contexts, emphasis is placed on maintaining fidelity to the recipe.

Another option is for organizations to disseminate intervention *strategies*, which are broad recommendations identified through expert consensus and through systematic reviews of the literature on what has worked across multiple research studies. For example, based on a systematic review of the literature, the Community Guide recommends changing public policies at the federal, state, or local level to increase tobacco products' purchase price and thereby reduce tobacco use [37, 50]. When strategies are based on the findings of multiple studies, they often provide evidence for effectiveness across multiple settings and populations [48]. They do not, however, provide detailed guidance on how to implement them in practice.

Both Center TRT and Counter Tobacco prioritize intervention strategies because they provide practitioners with greater flexibility than do the more prescriptive approaches offered by programs [48, 51]. Unlike prescriptive intervention programs, strategies allow practitioners to integrate interventions with ongoing activities to craft and evolve an action plan that leverages existing resources and accommodates the needs and priorities of collaborating stakeholders [52]. They also allow for greater flexibility for negotiation and compromise with those who may resist the proposed P&E change [36]. In other words, strategies are consistent with a self-organizing rather than vertically-controlled approach to change. Allowing the actors in a complex organization to self-organize increasingly is recognized as important to creating sustainable change in complex systems [52, 53].

In response to practitioners' experience of information overload [34], Center TRT integrated prominent obesity prevention guidance documents [33, 54-57] to create a consolidated list of 26 intervention strategies. Center TRT's intervention strategies include, for example, food and beverage marketing to favor healthy foods and beverages and urban design policy and zoning to facilitate physical activity [33]. The Center's website includes a search engine that allows practitioners to locate strategies by either setting (childcare, school, worksite, healthcare, and community) and/or topic (healthy eating, physical activity, and breastfeeding). Similar to Center TRT, Counter Tobacco reviewed existing literature and

consolidated recommended strategies into a list of six “policy solutions” that practitioners might employ to change the retail environment [37, 50, 54, 58-63]. The policy solutions include (1) licensing and zoning to impact the density, type, and location of tobacco retailers, (2) restricting POS tobacco advertising and promotions, (3) restricting product availability, placement, and packaging, (4) implementing POS graphic health warnings, (5) raising prices through non-tax approaches, and (6) implementing the 2009 Family Smoking Prevention and Tobacco Control Act provisions affecting point-of-sale.

3. Provide guidance on how to implement strategies

Whereas intervention programs provide step-by-step recipes and implementation materials, strategies typically provide far less guidance on how to implement them in practice. Both Center TRT and Counter Tobacco disseminate their strategies in a template that provides additional implementation guidance. Although the guidance provided is less prescriptive than what is possible with intervention programs, the templates provide an overview of the strategy, illustrations how it might be used in practice, and links to additional resources and tools. The template also provides citations to publications providing evidence in support of its effectiveness (See Figures I and II for illustrations of the two projects’ templates).

Formatting intervention strategies into a consistent template facilitates practitioners’ efforts to locate the information they need to compare and select strategies as well as the guidance they need to implement changes in policies and environments. In interviews with Counter Tobacco's target audience, practitioners reported that the Counter Tobacco policy solution template equipped them with the knowledge and confidence to engage in conversations with colleagues and new partners about why the policy solution should be a priority and how to get started. External resources link site users to legal consortium briefs, government reports and fact sheets, intervention materials and examples such as media campaigns or health warning labels, and organizations who could serve as technical assistance providers or partners.

4. Incorporate stories from the field

To provide practitioners with additional implementation guidance, both Center TRT and Counter Tobacco capture and disseminate stories and materials from the field. Much of the innovative P&E intervention work is occurring in practice [43]. The federal government is investing extensively in P&E interventions through Communities Putting Prevention to Work and, more recently, Community Transformation Grants. Fueled by these investments, communities are innovating new and better ways to implement recommended EBI strategies. The findings from these practitioner-developed interventions contribute guidance for other practitioners on how they might implement EBI strategies in practice [42, 64].

Center TRT captures and disseminates detailed descriptions of practitioner-developed interventions that employed one or more of its list of 26 intervention strategies. As of July 2013, the Center TRT website was disseminating detailed information about 29 practitioner-developed interventions. For example, Center TRT disseminates information about West Virginia's implementation of statewide standards for foods and beverages in its public schools, a P&E intervention that employs the strategy “increasing the availability of

healthier foods and beverages [33].” The intervention description includes details on the steps practitioners took to promote, implement, and evaluate the policy and highlights the barriers they encountered and keys to their success. The description also includes links to the enacted policy and nutrition standards, outreach and marketing materials, and evaluation tools.

Counter Tobacco incorporates stories from the field within its intervention strategy templates. For example, Counter Tobacco's template on graphic POS health warnings provides stories from New York City's attempt to enact mandatory warnings and includes text for the proposed ordinance and a link to the Center for Public Health & Policy's updates on the City's ongoing legal battle. The template also details Jefferson County Alabama's implementation of voluntary POS health warnings and provides links to graphics of the county's signage, rationale for their design, and findings from an initial pilot of the voluntary approach to POS warnings.

5. Build practitioners’ capacity to plan, implement, and evaluate P&E interventions

In addition to providing implementation guidance and tools for specific interventions, Center TRT and Counter Tobacco provide training, tools, and other resources to build practitioner's overall capacity to plan, implement, and evaluate P&E interventions Center TRT assesses practitioners’ perceptions of their competency to plan and implement P&E interventions and then designs online and in-person trainings to address areas identified as high need. Areas rated as highest need, and addressed in recent trainings, included engaging in the policy-making process, raising awareness via mass media, and evaluating intervention processes and outcomes. Center TRT has also developed several tools, most notably a framework and other resources that practitioners might use to evaluate all phases of the P&E intervention process. [65] In collaboration with faculty at St. Louis University, they also have adapted a tool that practitioners can use to assess and strengthen an intervention's potential for long-term sustainability [66].

The Counter Tobacco website includes an archive of a dozen 90-minute CDC POS training webinars covering legal issues and youth engagement among other topics. Counter Tobacco also provides a range of resources that practitioners’ can use to raise awareness of the POS problem, engage partners, overcome resistance, and educate for change. The website disseminates an issue brief entitled “About the War in the Store” that summarizes the problem at POS and two slide shows on the evidence in support of POS interventions with written narration that practitioners might adapt for presentations to potential stakeholders. The site also features pre-packaged youth and community engagement activities (see Figure III) and data collection tools such as store observation forms and public opinion poll templates. These tools can be used to assess the extent to which retailer's marketing or products are designed to appeal to youth and their compliance with regulations. Counter Tobacco also is partnering with the National Cancer Institute's State and Community Tobacco Control initiative to develop a standardized store assessment form for use across the United States.

Counter Tobacco is also home to galleries of store images, maps, and print campaigns, with a video gallery coming soon, that practitioners can use to make the case for the POS

problem. The store image and map gallery contains hundreds of images, most crowdsourced from practitioners. Images capture prominent displays of tobacco products and marketing at stores such as photos of cigarette advertising directly adjacent to candy or other products with youth appeal. Maps are created using geographic information systems (GIS) to convey strong relationships between greater retailer density and key demographic variables by census tract, such as percentage of households in poverty.

6. Integrate dissemination into practitioners' interpersonal professional and social networks

Close to half a century of research on the diffusion of innovations has established the importance of interpersonal relationships and trust to promoting practitioners' use of interventions [67]. Center TRT disseminates its interventions through communication channels that practitioners not only know and trust but are already accessing on a regular basis. Through its formative work, the Center learned that its target audience's most valued sources for information include CDC project officers, other CDC resources, and their peers [34]. Every time the Center adds a new intervention to its website, staff post a notice on the listserv that the CDC uses to communicate with obesity-prevention practitioners. To foster peer-to-peer networking and communication, the Center convenes members of its target audience for an annual 5-day obesity prevention course. In addition, both Center TRT and Counter Tobacco introduce their resources via webinars and at the national conferences practitioners attend. To develop interpersonal relationships and build brand awareness, Counter Tobacco also uses two social media channels, Facebook (http://www.facebook.com/CounterTobacco) and Twitter (https://twitter.com/CounterTobacco). Social media campaigns include photo contests, news of media coverage of policy debates or implementation, quick research summaries, and shares of content posted by partner tobacco control organizations.

Discussion/Conclusion

Practitioners more readily adopt and implement EBIs when they address practitioners' needs and aspirations [51, 68], are integrated within their social and professional contexts [69, 70], and include comprehensive implementation guidance [71]. To be effective, practitioners need to have the flexibility to develop P&E interventions that integrate stakeholder priorities and resources and accommodate existing local policies and environments. To support practitioners as they engage in this work, Center TRT and Counter Tobacco disseminate evidence in the format of broad, flexible recommendations of the most effective intervention *strategies* and then link those recommendations to implementation guidance and materials. Both programs also have developed tools and trainings to strengthen practitioners' capacity to engage in the overall process of planning and implementing P&E interventions. The evidence base for P&E interventions is emerging rapidly and much of the new knowledge is being generated in practice. To capture these new findings, both programs facilitate peer-to-peer interactions and disseminate lessons from practice.

The decision to focus on disseminating intervention strategies versus more prescriptive intervention programs has limitations. In the absence of a recipe, practitioners have less guidance to implement the intervention with fidelity to the approach that was effective in

prior research studies and, therefore, may have less potential to be effective in practice. However, several surveys suggest that practitioners are making only limited use of EBI programs in practice [72, 73]. Furthermore, a growing number of scholars are questioning the utility and relevance of EBI programs for complex systems change [49, 53].

The decision to disseminate the best available as opposed to best possible evidence might also be viewed as a limitation. However, the IOM and others argue that practitioners cannot wait for the best possible evidence and must act now to improve policies and environments [44]. Furthermore, research on P&E interventions may not be amenable to the research methods generally viewed as the gold standard for determining effectiveness. Documenting effectiveness is challenged by the length of time required for interventions to affect health outcomes, the frequent co-occurrence of multiple interventions [43], and the limited applicability of controlled trials study designs [11]. Both Centers respond to the emergent nature of the evidence on P&E interventions by building practitioners' capacity to evaluate the effectiveness of their interventions, with a particular focus on assessing their impact on environments.

Center TRT and Counter Tobacco have both had success reaching their intended audiences. Research is now needed to assess the extent of practitioners' use of disseminated recommendations, guidance, and tools in practice and the impact of the resulting interventions.

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Fig. 1.
Screen capture of Center TRT intervention strategy template

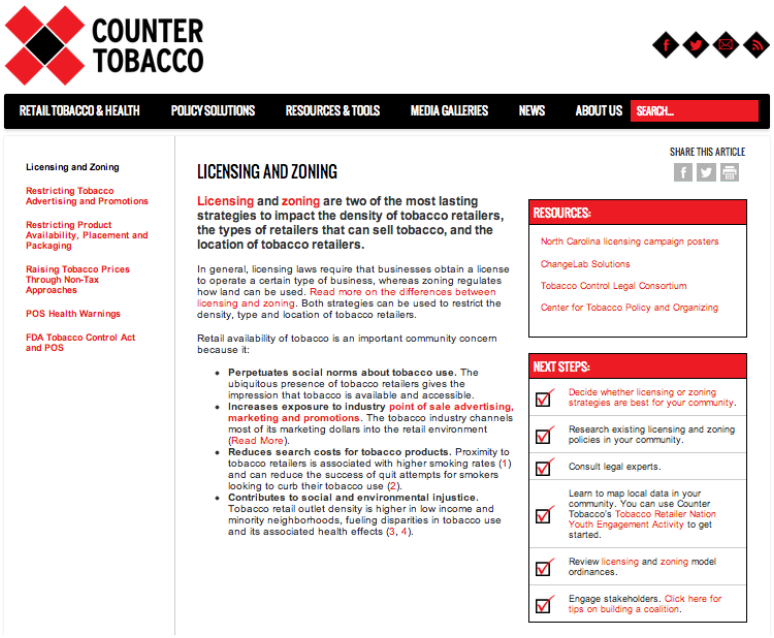

Fig. 2.

Partial screen capture of Counter Tobacco Licensing and Zoning policy solution template

Fig. 3.
Pre-packaged community and youth engagement activities (CounterTobacco.org)

Table I

Distinct features of P & E interventions and recommended approaches to dissemination

Distinct features of P&E	Recommended Approaches to Dissemination
Evidence is emerging	1. Identify the best available evidence • Evidence in support of effectiveness includes: - Evidence of changes to environments - Findings from expert consensus - Findings from natural experiments • Regularly update disseminated EBIs to remain current with latest evidence • Build practitioners' skills to evaluate intervention impact
P&E change is complex	2.Prioritize EBI strategies over programs • Consolidate existing lists of EBI strategies • Disseminate consolidate strategies as a menu of options 3.Provide guidance on how to implement each strategy • Disseminate alternative approaches to implementing each strategy • Disseminate illustrations of each strategy in action and links to additional resources and tools 4.Incorporate stories from the field • Disseminate the lessons practitioners experience implementing strategies • Disseminate materials and tools that practitioners have developed
Vested interests may resist change Interventions may have high start-up costs Interventions require distinct skill sets	5.Provide tools, training and other resources to support the overall policy and environmental intervention process • Disseminate tools to collect assessment and evaluation data • Disseminate promotional materials and other resources to engage partners and counter resistance • Provide training to build practitioners' competency to plan, implement and evaluate policy and environmental interventions 6.Integrate dissemination into practitioners' existing professional and social networks

P & E, Policy and environmental