National Prevention Science Coalition to Improve Lives
Edna Bennett Pierce Prevention Research Center
The Pennsylvania State University
www.npscoalition.org

A Multi-Issue Prevention Model for Benefiting Society While Reducing Government Spending [1]

Taylor B. Scott[1], Mattea Kramer[2], Neil Wollman[3]

Federal budget negotiations in Washington have gridlocked over seemingly irreconcilable priorities. While cutting federal spending is the highest priority for some lawmakers, other lawmakers believe that the federal government has a responsibility to act in certain areas —including health care, education, and infrastructure, among other areas. Yet there is an alternative that meets both objectives. If funds were invested upfront to prevent certain major problems before they arise, future spending would be reduced; and program cuts could be made as a natural consequence of reduced need, not just to save money. Indeed, when problems arise, the first thought at any level of government should be not just solving the problem now, but avoiding it in the future. Spending now will pay off later, often in three to ten years.

This paper lays out how a prevention model can reduce federal spending while benefiting society in six primary areas: health care, education, criminal justice, environment, national defense, and infrastructure. Furthermore, the prevention model applies to numerous additional areas that are topics for further exploration.

Health Care

The U.S. health care system has a propensity for treating chronic disease rather than preventing it, and the Institute of Medicine estimates that costs are $750-$765 billion more than needed to attain existing health outcomes, with some of that being prevention related (link; link). Chronic diseases, many of which are linked with smoking and obesity, contribute not only to expenses in the health care system, but to a loss of productivity (translating into lost tax revenue). They disproportionately consume resources, having a total economic impact of $1.3 trillion annually (link; link).

Though arguments have been made that health care prevention does not save money (link), it can, depending on the strategy used and for whom one is considering cost-savings (e.g., federal/state government or private payer). Some prevention strategies save money (link; link; link; link; link), whereas few treatment interventions do (link), and cost of treatment is often not even considered (for instance, Medicare policy explicitly states that costs will not determine coverage of a treatment). In contrast, despite ethical advantages and apparent contribution to quality of life (link), there are great

[1] The prevention model applies to state and local government spending as well; this paper is primarily concerned with federal spending. Prevention savings stated here or elsewhere cannot be merely added to find a grand total, as it will result in some double counting (e.g., savings made by some childhood interventions will alleviate problems later in life for some). At the same time, many cost-savings analyses represent conservative estimates of savings because there are indirect savings not included because they were outside the scope of analysis.

demands for prevention to demonstrate cost savings. But even when prevention does not demonstrate cost-savings, it can be "cost-effective" (link; link), providing good value in health for the money spent. A list of cost-saving and cost-effective prevention strategies is provided by Tuft's Medical Center (link; link). Furthermore, the indirect benefit of increased government income tax revenues (due to higher productivity and fewer absences) are often not figured into the financial benefit equation, even though health problems affect national productivity, spending on social programs such as Social Security/Disability, and tax revenue (link). And, healthier people or their employers pay lower health care premiums, which translate into higher taxable wages for workers.

Nevertheless, there are means to increase the likelihood that prevention will be cost-saving, and not just cost-effective. Much research has been limited in its ability to demonstrate cost-savings because the intervention did not target high-risk populations, nor was a sufficient time frame given to see savings (preventive interventions often affect health far into the future (link). Also, the scale of intervention can be too small to be efficient (link), and inaccurate assumptions are made about costs. For example, total Medicare costs of those living longer, healthier lives are not greater due to added years of life and coverage, because high medical expenses tend to occur in a limited time period prior to dying (link).

As noted, the cost-savings of prevention in healthcare depends on *which strategy*. Those that promote healthy behavior and environmental conditions have the greatest potential for long-term cost savings (link; link). For example, a penny-per-ounce excise tax on sugar-sweetened beverages can help prevent many deaths, avoid over $17 billion in medical costs, and generate about $13 billion in annual tax revenue (link). Furthermore, cost savings are more likely when targeting high-risk individuals and providing services in certain settings. For instance, an evidence-based weight loss program targeting overweight or pre-diabetic, older adults could save over $3 billion Medicare dollars within ten years, and over $12 billion over participants' lifetime (link). Some community-based programs have demonstrated greater effectiveness and are less costly than medical doctors' services. Risk-reduction programs at worksites are also less costly than medical treatment, can improve employee health and cost-savings to the company, and increase worker productivity (link; link).

There are additional health related areas for which prevention is beneficial. Health and Human Services reports that the total cost of drug use disorders in the U.S. is about $180 billion annually, and $184.5 billion annually for alcohol abuse (link). Every dollar spent in alcohol and drug prevention saves $7-$20 in costs from crime/incarceration, emergency health care, lost productivity, and early death (link). There is other relevant work regarding substance abuse (ink; link). Mental health is yet another area where prevention helps patients as well as saves money (link; link; link; link). Finally, the rising rate of unintended pregnancies results in many costly aftereffects (e.g., public assistance); meanwhile, programs exist that reduce that likelihood and return $2 – $4.26 per dollar invested (link).

Education

High school graduation is paramount for success in the U.S., as those who drop out often experience negative economic and social consequences, and often share these burdens with society. High school dropout results in lost economic opportunities, less tax revenue, and additional costs in crime, public

health, and welfare. For example, those who drop out are 10-20% more likely to commit nonviolent or violent crimes (link). These negative effects total to $258,240 per drop-out over a lifetime (link).

Investing in high school graduation benefits young adults and the public, and also promotes efficient use of public resources. Cutting high school dropout rates in half would increase government revenues annually by $45 billion ("via extra tax revenues, reduced costs of public health, crime and justice, and decreased welfare payments"), with two-thirds going to the federal government (link). Plus, there is concern about producing enough postsecondary degrees that the market demands [3 million more needed than projected for a decade (link)].

A multitude of evidence-based strategies spanning from childhood to early adulthood have been proposed to address educational needs (link; link; link). It is generally acknowledged that it is more costly to remediate older children than to intervene earlier in life. However, the effectiveness and cost savings of early intervention have been questioned. For instance, critics note that limited, one-year programs have struggled to demonstrate sustained benefit to children once they enter kindergarten. These findings shouldn't be confused with other programs that are more intensive, small scale, and not facilitated through the public education system. The most cost-saving programs target high-risk children who have the most potential for improvement (link; link; link), although some research still supports a cost-benefit of certain models of publicly-funded, universal Pre-K programs (link). Never-the-less, registries employing rigorous evaluation standards include a number of programs showing good effects on early cognitive or language development (link; link; link; link; link; link).

Although there are documented benefits from early intervention, continued investment is usually required to sustain those gains. Early intervention essentially provides a firm foundation on which to build successful learning experiences, but environments conducive to learning following Pre-K remain an important predictor of success later in life (link). For the long run, a 2005 analysis found that early childhood programs for vulnerable populations would dramatically increase savings; by 2050 there would be an annual federal/state government budget savings of $61 billion, a GDP increase of $107 billion, and a crime related savings of about $155 billion in 2004 dollars (link).

Although early childhood education may have greatest return on investment, programs for older children at-risk for dropping out have also demonstrated cost savings (link). However, higher costs for remediating older youth detract from potential return on investment. And, it is more expensive to help youth who have already dropped out of school than to provide support for students still in school. Even intervening with emerging adults could be beneficial because youth who are *disconnected* (i.e., not in school or working) are more likely to be involved in crime.

Given the estimated costs of high school dropout, the costs of these programs are still likely to be lower than the benefits (link). Additionally, increasing salaries to attract higher quality teachers or reducing class size has demonstrated returns of $1.5-$2.6 per dollar invested (link). The What Works Clearinghouse provides a review of research on programs that have been shown to have demonstrated value (link).

Criminal and Juvenile Justice

The rate of incarceration in the U.S. is higher than all other countries in the world, and is three times higher than Poland, the country with the next highest rate among affluent nations. Costs for correction-related services were about $75 billion in 2008 (link; link; link); while the annual cost of all crimes' aftermath well exceeds $1 trillion (link, 1999 figures). Though states manage their own judicial systems, hundreds of billions of dollars go towards federal expenses and revenues, making it ripe for potential savings in federal justice agencies, health care for victims, drug trafficking enforcement, and federal corrections. Additionally, there would be added income tax revenues from working citizens not harmed by crime or not in jail, due to prevention of some crime.

Similar to education-related prevention, early intervention may provide the largest cost-benefit (e.g., Nurse Family Partnership; link). Every dollar can return $7-10, much of which comes from a reduced need for prisons and their operations (link). Programs targeting youth offenders have saved taxpayers up to $32,915 per youth offender (link). Multiple treatments for youth offenders offer large savings (totaling up to $88,953 per youth (link).

Reducing the cost of corrections can also be accomplished with strategies that reduce recidivism. On average, 1 of 2.3 prisoners returns within three years of release (link). A review of strategies used in Washington State found that programs incorporating a cognitive-behavioral approach reduced recidivism (link). Vocational education and treatment for mental illness or substance abuse reduce recidivism and offer average savings of $20,714 and $19,118 per adult offender (link). Summaries of evidence-based programs are provided by Crime Solutions (link).

Although evidence-based programs are available, policy makers must be wary of endorsing programs without mechanisms for accountability. Much of the variability in a program's effectiveness can be attributed to how well a program is implemented, which can be affected by a provider's training, supervision, and amount of treatment he or she can offer (link).

Unfortunately, less than 10% of youth involved in the juvenile justice system actually receive evidence-based programming. Barriers include competing local government needs, as many states fund on a county basis. Thus, it is up to states to share prevention cost-savings information with counties, to build county capacity, or to provide other incentives. For instance, eight states have passed laws that return some state savings to county probation agencies when recidivism rates are reduced (link).

Environment

Each additional ton of carbon dioxide released into the atmosphere today will cause around $21 of damage globally. Over the next four decades, damages to the U.S. are estimated at $85 billion on average each year, with that figure reaching $200 billion annually by 2050 (link). Furthermore, a recent study found that, in the absence of climate mitigation measures, the release of a major store of methane in melting permafrost in the Arctic would ultimately bring up to $60 trillion in global economic damages over several decades—nearly the size of global annual GDP—with some of those damages occurring in the U.S. (link). These costs are not a hypothetical but rather a current budget reality; in fiscal 2012 alone, the U.S. government spent $96 billion in climate disruption costs following natural disasters—more than all federal spending for education programs in that year (link).

As the Congressional Budget Office has noted, analyses suggest that well-designed measures to reduce greenhouse gas emissions offer benefits greater than associated costs (link). According to one study, between now and 2050 a U.S. cap-and-trade program would incur costs between $600 billion and $1 trillion while yielding benefits (some accruing to other countries) ranging from $1.5 trillion to $1.7 trillion—a highly favorable cost-benefit ratio (link). The success of an existing regional cap-and-trade program in the northeastern U.S. offers additional evidence. The program has prevented the release of millions of tons of carbon, generated hundreds of millions of dollars in revenue for participating state governments, and brought net positive benefits to the regional economy, according to a report by a consortium of participating states (link).

The prevention model applies to other kinds of environmental pollution beyond the release of greenhouse gas emissions. Sample research suggests the potential for considerable cost savings by reducing pollution at its source (link; link).

National Defense

The U.S. national security budget spends heavily on offense (equipment and training for the theater of war), far less on defense (homeland security and related activities), and less still in the prevention of armed conflict. Yet a variety of evidence suggests that the targeted use of prevention strategies could save billions—or trillions—of dollars over time (link). Since 2001, the U.S. has spent more than $1.4 trillion on wars in Iraq and Afghanistan, with tens of billions more projected in fiscal 2014 (link). Congressional testimony by Lund and Schirch (7 May 2009) revealed that the "cost ratios of prevention to war ranged from 1:1.3 to 1:479, an average of 1:59" (link).

The infrastructure to engage in coordinated prevention of armed conflict is already largely in place; a strategic resource shift into prevention activities is required. Whereas offense, defense, and prevention currently exist in silos in the U.S. government, a shift toward a "unified security budget" would allow for greater investment in prevention (link). A coordinated menu of prevention activities would include: targeted development policy and aid for high-risk regions; the creation of a standing international peacekeeping force for immediate response to crisis; and better investment in, and leveraging of, United Nations peacekeeping, which the UN's own General Accounting Office estimates to be eight times less expensive than U.S. military force.

When the U.S. does find itself entering into armed conflict, there is also potential for the prevention of adverse health outcomes and costly care for soldiers through up-front mental health assessments and better-coordinated care, including in the theater of war (link).

Infrastructure and Natural Disaster Preparedness

The U.S. currently has a long backlog of needed infrastructure investment. According to the American Society of Civil Engineers (ASCE), one in nine bridges in this country is structurally deficient; across all types of infrastructure, an investment of more than $2 trillion is needed for updates and repairs. Yet even as the public sector has lagged in making such investments, evidence suggests that targeted infrastructure spending yields substantial savings down the road by preventing flood damage. The ASCE

found that federal spending on levees yields a return of $6 for every dollar spent, with that number rising as a high as $24 for certain major levee systems (link; link). Another study estimated that, on average, each dollar put toward infrastructure and disaster prevention saves $7 when calamity strikes (link).

Identification of Interventions

The Coalition for Evidence-Based Policy has found that much research on which government programs have been based is not rigorous; i.e., the programs were established on invalid or insufficient evidence. However there are ways to evaluate evidence (link) and it will be important to start with rigorously tested best-practices programs, pilot test less researched programs, and to do regular evaluation of program effectiveness. The Coalition suggests a low-cost format for evaluating program effectiveness (link). Fortunately, though not looking specifically at the research cited here, the Coalition has analyzed well controlled studies that demonstrate effectiveness of programs in many areas of work cited above (link). And there now exist many other databases referencing successful "evidence-based programs" in both areas covered here and otherwise (link); see links at top of page (link; link); see links to prevention research centers/institutes (link). A guide to selecting evidence-based programs has been developed by the Interagency Working Group on Youth Programs (link).

Due to different methodological philosophies or practices, various entities differently define what is "well-tested" and thus caveats just mentioned should be followed. But even using rigorous standards that render a high percentage of interventions as unproven, there are more than sufficient well evaluated interventions in multiple policy areas. For example, "Blueprints for Healthy Youth Development" rigorously evaluated over a thousand program interventions regarding "Behavior, Education, Emotional Well-Being, Physical Health, and Positive Relationships". They found 10 model programs and 37 promising ones, many helping in multiple problem areas (link). There are programs that can benefit millions of people—with federal savings and added revenues of billions of dollars annually—if implemented widely, in many policy areas, and in known productive ways.

Unfortunately, the reality is that evidence-based research has not been utilized nearly as well as it could be—perhaps a major reason for insufficient progress in some policy areas. For example, a survey of the nation's public schools revealed that a large number of prevention programs were used during the 2004-05 school year, yet only 7.8% were supported by strong research evidence. Of those using research-supported approaches, only 44% met minimum criteria for fidelity to the program model (link). The same likely applies in other policy areas.

Additionally, targeting funds for new prevention-oriented research could reveal new cost-saving and effective measures in any number of policy areas. One health care model that can be applied to other sectors involves identifying and utilizing with larger populations what works now and might in the future, and identifying programs that should be eliminated due to ineffectiveness and cost (link).

Implementation of Interventions

Sometimes well-researched, effective interventions do not subsequently bring success because they are not effectively applied. Identifying core mechanisms of change helps to support adherence to an evidence-based program's design while still allowing flexibility to tailor interventions to the unique needs and contexts of different settings (link). The new area of "implementation science" will help this process ("research to translate evidence-based findings into common practice;" link).

Quality implementation is supported by informational tools, training, technical assistance, and quality assurance processes (link; link). Training helps to provide a strong foundation for implementing with fidelity, but alone is not sufficient to change behavior without assistance or coaching to help practitioners learn on-site. Effective trainings provide information, demonstration, and require behavior rehearsal (link). Further capacity must be available with critical infrastructure, resources for operation, access to a target population, and revised policies and practices that support implementation. A 10-step model known as *Getting to Outcomes* can help to ensure adequate capacity for effective prevention practices (link; link). Sites often vary in the implementation of the same program, which results in variability of cost-effectiveness ratios (link). It is necessary to continuously monitor program fidelity and outcomes with ongoing data collection that can inform continuous quality improvement. In general, there is a need for much greater investment in program evaluation at the local level, as this can help to draw some conclusions about what works and is replicable (link).

Communities striving to implement an array of evidence-based prevention programs may consider following the model of local governance known as *Partnership for Results*. Community leaders can lower juvenile violence and crime by institute systematic screenings that identify at-risk youth, develop a quasi-governmental partnership with system leaders, collect data about services that can be shared across agencies, provide a continuum of services that include prevention and early intervention programs, train and technically assist practitioners to maintain fidelity, and create a credible plan for sustaining programs (link).

Federal vs. State/Local/Private Budgeting

Another factor in the equation is that obviously not all prevention programs and costs/benefits are tied to the federal government and budget. Many are funded by the private sector or state and local governments. Thus, neither costs nor benefits are borne by the federal government. Cost savings and positive effects may remain at the state or local level initially, although it is worth noting that often times what starts out at the local level will eventually affect federal government. There are complex relationships between these sectors regarding program/budget/economic considerations, but there are still possibilities for savings if the private/state/local government sectors also apply prevention strategies. For example, private sector savings will benefit productivity and the general economy, with ramifications for the federal budget. Plus, more solvent states and cities will have lowered need for federal assistance if the outcomes for its citizens improve substantially. Besides the Washington state example above, Oregon now requires that significant funds spent by five state agencies be spent on effective (evidence-based) and cost-saving programs (link). Other state examples include Missouri's Division of Youth Services, which has received national and international recognition as a "model" state juvenile justice system (link), Pennsylvania's use of evidence-based delinquency prevention programs

across the state (link), and Florida's Redirection Project, which has shown a $51.2 million cost savings to the State of Florida over several years (link).

Presumably other evidence-based prevention programs could similarly benefit the federal budget as well as state budgets. Some state officials are becoming more aware that even in rough financial times, investment in some prevention is healthier for future state budgets than continued cutting (e.g., link; link; link). Cayuga County in New York (link) and Palm Beach County in Florida have also successfully utilized evidence based programs (link). Given some state and local deficits, initial outlays (even loans) by the federal government for evidence-based prevention programs might induce their participation. Additionally, an exciting new area is the introduction of private investment into social enterprises and public-private investment partnerships. One development that started in the UK in 2010 has now brought interest from both the national and state/local governments in the U.S. Social Impact Bonds allow private sector constituencies, working with governments, to invest in prevention and other interventions and to reap some of the future savings, if they occur—with governments not at risk if the interventions do not succeed financially (link; link; link; link; link; link).

Barriers to Implementing Prevention Strategies

Political opposition will arise from those against initial outlays for prevention or from those who have a vested interest in fixing problems rather than preventing them. Accommodations with these interests may be required to pass legislation. And the prevention model in some sectors (like health care) may require public education campaigns and "nudges" in order to induce preventive behavior (link). A strong Congress, president, and state government structures are necessary to effectively implement a prevention model—but doing so should have appeal across the ideological spectrum. Research indicates that framing budgets in terms of prevention is appealing to citizens (link).

Conclusion

Taken individually or in combination, these interventions represent a departure from the way federal spending currently takes place. While many billions of federal tax dollars currently are dedicated to treating preventable problems after they arise, this paper lays out a menu of prevention strategies for a far more efficient use of the federal tax dollar and to improve health, social well-being, the environment, and national security. And on a personal level, prevention also generates higher levels of welfare and happiness: it is better to not get diabetes than to successfully treat it; to avoid an oil spill rather than clean it up; to stay out of prison rather than be rehabilitated.

==========

[1] The prevention model applies to state and local government spending as well; this paper is primarily concerned with federal spending. Prevention savings stated here or elsewhere cannot be merely added to find a grand total, as it will result in some double counting (e.g., savings made by some childhood interventions will alleviate problems later in life for some). At the same time, many cost-savings analyses represent conservative estimates of savings because there are indirect savings not included because they were outside the scope of analysis.

==========

[1] Doctoral Student, UNC-Charlotte
[2] Director of Research, National Priorities Project
[3] Senior Fellow, Bentley Alliance for Ethics and Social Responsibility; Bentley University; Co-Director, National Prevention Science Coalition to Improve Lives

==========

National Prevention Science Coalition to Improve Lives

Vision Statement:

Guided by science, the National Prevention Science Coalition to Improve Lives envisions a society that fosters nurturing environments and caring relationships for the well-being of all.

Mission Statement:

To prevent social ills and promote wellbeing by translating scientific knowledge into effective and sustainable practices, systems and policies.

Website: www.npscoalition.org