

On the Epidemiologic and Economic Importance of the National AIDS Strategy for the United States

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BACKGROUND

For years, the United States found itself in the embarrassing situation of having no overarching AIDS strategy for the country.¹ True, there were pieces of a national strategy,^{2,3} but there was no comprehensive coordinated roadmap with clear and measurable targets for key metrics.

That all changed on July 13, 2010, when the White House unveiled the National AIDS Strategy (NAS) for the United States.⁴ The NAS was published over the signature of President Obama, and he held a reception at the White House to launch the Strategy. The NAS was not released in isolation but rather was accompanied by an initial implementation plan through 2011,⁵ and a Presidential memorandum that directed the relevant federal departments to develop an even more detailed implementation plan within 150 days.⁶ The Presidential memo also directed the Office of National AIDS Policy in the White House and the Secretary of Health and Human Services to play major coordination roles to ensure that all federal efforts to implement the NAS are well integrated. The launch of the NAS fulfilled a Presidential campaign promise to deliver a clear, action-oriented roadmap for addressing the epidemic in the United States. The Administration previously had made clear that a new HIV infection in the United States every 9.5 minutes was simply too much, that 21% of persons living with HIV not knowing their HIV serostatus was too high, that access to HIV care was imperative (among persons who are aware that they are living with HIV, roughly one-third are not in treatment), and that HIV-related health disparities were unacceptable (with African American, Latino, and gay communities shouldering a very disproportionate burden in the epidemic).⁷⁻¹⁰ The President had focused in his campaign and in his early days in office on the tripartite framework of reducing new HIV infections, improving access to treatment, and reducing HIV-related health disparities; this 3-part approach provides the skeletal structure of the NAS.^{4,5}

PURPOSE OF EDITORIAL

The purpose of this editorial is to reflect and elaborate on the epidemiologic and economic impact that the Strategy may have in the United States if its stated goals are fully realized.

KEY ASPECTS OF NAS

We do not need to restate the many details of the NAS because the Strategy and much supplemental material is readily available on the websites of the White House and AIDS.gov^{11,12}; further more than 2000 news articles and blog postings have been written about the Strategy in less than 1 week. However, it is useful to highlight the key goals of the

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Disclaimer: The author serves on the Presidential Advisory Council on HIV/AIDS (PACHA) the members of which were permitted to provide comments on a draft of the National AIDS Strategy. The author also conducted some original analyses on subpopulation relative risk of HIV infection for the Strategy. Neither the author nor PACHA had control over the final content of the Strategy. This editorial is solely the opinion of the author and should not be interpreted to reflect the views of PACHA in any way.

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NAS.⁴ Regarding reduction of HIV incidence, the NAS aims to lower incidence by 25% by 2015, in the same time period reduce the HIV transmission rate (simply put, the transmission rate is incidence divided by prevalence \times 100) by 30% and increase to 90% (from 79%) the proportion of people living with HIV who know their serostatus.⁴ This is to be accomplished by an increasing use of evidence-based HIV prevention interventions in a more targeted fashion to address the epidemic in communities most heavily impacted.

Key goals regarding access to care include the following: (1) to increase to 85% (from 65%) the proportion of patients newly diagnosed with HIV linked to care within 3 months; (2) increase to 80% (from 73%) the fraction of Ryan White Program clients who have at least 2 routine HIV medical visits per year (where the visits are at least 90 days apart); and (3) increase to 86% (from 82%) the proportion of Ryan White program clients who have permanent housing.⁴ As to reducing health disparities and inequities, the NAS aims to increase by 20% the proportion of persons living with HIV who have undetectable viral loads in the following populations: gay and bisexual men; Blacks; and Latinos (using the population labels employed in the NAS).⁴

CAN INCIDENCE BE REDUCED BY 25% BY 2015?

It is important that the NAS set bold yet epidemiologically achievable goals. While every new HIV infection is preventable, HIV prevention programs have been substantially underfunded for far too long, and sadly we cannot instantly reverse the epidemiologic damage of those years of policy neglect. In fact, we might ask if it is possible to reduce incidence even by 25% in 5 years. HIV incidence is, of course, a function of HIV prevalence and the HIV transmission rate. HIV prevalence in turn depends on prior year incidence and current year HIV-related and non-HIV-related deaths. The transmission rate depends on many factors including risk behaviors, awareness of serostatus, access to prevention services, access to treatment and care services, and the effectiveness of all such services. Adapting a mathematical model previously employed in other analysis to predict future HIV incidence and prevalence and to project the impact of prevention programs (and assuming that without the NAS, the HIV transmission rate in the United States would remain flat at the current level of 5.0),^{13,14} we can ask: "Is it possible to reduce HIV incidence by 25% in 5 years if all of the other goals set in the NAS are met?" My application of this model indicates that the answer is "yes," provided that indeed all of the other NAS goals are satisfied and also that the number of HIV seronegative partners of persons living with HIV is reduced by 10% (this last condition is not a stated goal of the NAS but it must occur if the incidence target is to be achieved). This model predicts that if these other goals are met, then incidence would decline approximately 25.1% by the end of 2015. This finding implies that the set of goals in the NAS has some logical consistency in that the levels of all the goals taken together make epidemiologic sense.

However, it is important to note that if the "other" goals (such as the HIV transmission rate) would have been set at more aggressive levels (say, a 50% reduction rather than a 30%

reduction), then a more aggressive goal for incidence reduction would have been possible. For instance, based on the use of a similar mathematical model, I have testified before Congress that in 5 years time, the right investment in key evidence-based interventions could lead to a reduction in transmission rate and incidence of 50%.¹⁴ So, saying that the NAS goal of reducing incidence by 25% is epidemiologically achievable is not the same as saying it is the most aggressive goal that would have been possible if the other goals had been set more aggressively.

It is also important to highlight that even though the NAS goal of 25% reduction in incidence could be met by 2015, it will not stay at the lowered percentage if the transmission rate flattens out at a projected 3.36 (instead of the currently estimated 5.00)^{13,15} from the years 2015 through 2020. Indeed, if the transmission rate is flat from 2015 through 2020, then incidence could climb back over 50,000 infections per year by 2020. Hence, to get incidence to a new, lower level and maintain it there will require continued progress in lowering the transmission rate.

HOW WILL THE EPIDEMIC BE CHANGED IF THE NAS TARGETS ARE ACHIEVED?

Whether or not the NAS goals are the most aggressive possible, if they are achieved, they will substantially alter the epidemic in the United States. Again, using the transmission model noted above, I estimate that if the goals of the NAS are achieved, then approximately 75,800 infections will be prevented through 2015. What is more, achieving the goals of the NAS helps to alter the trajectory of the epidemic such that even more infection could be averted in 2016 through 2020 (from the present through 2020, I estimate that the total number of infections averted would be approximately 237,700).

Further, if the care and treatment expansion proposed in the NAS is realized, I estimate that in 2015, roughly 218,900 more people living with HIV will be in care than would have otherwise been the case (and this is just in care supported by the public sector). This estimate assumes that currently about 67% of people aware that they are living with HIV are not in care.^{4,16} Further, I assume that to meet the NAS goal of 85% linkage to care within 3 months of diagnosis will eventually imply that 85% of persons aware they are living with HIV will be connected to clinical care (so I am modeling an implication of the NAS treatment expansion goals). Even with some uncertainty in the model input parameters, there is no question that if the goals of the NAS are achieved, then the US epidemic will be very different than if the NAS simply is put on a shelf and the goals not realized.

WHAT ARE THE ECONOMIC IMPLICATIONS OF THE STRATEGY?

In the avalanche of media stories that followed the NAS, an overarching (but of course not universal) theme was that the goals and major actions steps of the plan were to be applauded, but there were questions as to whether or not resources will be made available to implement the substantial activities described in the NAS and achieve its stated goals.^{17,18} The

NAS notes that new resources, redirected resources, and public/private sector partnerships will all be needed if the vision of the Strategy is to be realized; but no further specifics are given.⁴ This is an important omission because prevention funding has been languishing for years now in the United States,¹⁹ and treatment resources are obviously lacking in that the number of people on AIDS Drug Assistance Program waiting lists and unmet needs rosters is dramatically expanding by the month.²⁰

Using the transmission model noted above, previous Congressional testimony and previously published cost analyses of various types of care, treatment, and housing services,^{13,14,21–24} I estimate that in sum total across all years through 2015, the achievement of all elements of the NAS will require an additional investment of roughly \$15.175 billion (\$2.061 billion would be for prevention; roughly one billion dollars for housing services; and the remainder for treatment and care; all values discounted at 3%). This additional investment could be new, redirected (but only if the redirected monies can be shifted without harming effective programs), or public/private sector partnerships. Further, with the full implementation of the Affordable Care Act in 2014, some of the public sector costs would be covered under that new “program,” and some costs would accrue to a presumably revamped Ryan White Care Act.⁴ Although this might seem like a large total figure, it is critical to note that if the prevention element is indeed fully funded and meets the NAS prevention goals, then the public sector medical care costs saved by averting new infections tally approximately \$17.981 billion which is larger than the expenditures for all elements of the NAS. Hence, the prevention elements of the NAS could avert enough new infections to “pay for” the treatment expansion for persons now or very soon to be living with HIV under the status quo. The model I have employed also indicates that the ratio of savings relative to program costs further improves in 2016 through 2020 because the trajectory of the epidemic will have been fundamentally changed (as noted in the section above).

LOOKING AHEAD

I believe that there are several important next steps, which must be accomplished regarding the NAS. Some of these steps are of direct relevance to the research interests of the readers of *J Acquir Immune Defic Syndr*. First, it would be useful to have other rapid analyses done of the epidemiologic and economic implications of NAS; although the analyses noted above are conservative and rely on previously published techniques, conclusions are always stronger if they emanate from multiple mathematical modeling studies. Second, the detailed implementation plans to be submitted by the relevant federal agencies in the next 150 days will be very interesting to carefully review for their use of the scientific literature, the scale of the programs proposed, and methodological techniques offered for gauging the impact of proposed activities. Third, the NAS launch should challenge researchers to think carefully about what research questions need to be answered very rapidly so as to fill key knowledge gaps that could impede achieving this particular set of goals within 5 years; the

expansion of *J Acquir Immune Defic Syndr* to include a section on Implementation Science and Operations Research could not have come at a better time. Indeed, the time frame of the NAS is critical to keep in mind; for instance, although there have recently been promising developments in microbicide research,²⁵ we must ask whether or not such a new addition to the HIV prevention armamentarium will be available to assist in meeting the goals set for 2015.

There are other key next steps that include but go beyond research questions. Fourth, it will be key to monitor and evaluate Congressional action on the NAS; clearly the appropriations process in the United States involves multiple parties but is centrally driven by the Congress. Without Congressional action, this plan’s chances for success are tremendously diminished. The resource needs noted above are substantial but action must be taken to make them available (be the resources new, redirected, or from the private sector). Further, no matter the funding source, if we fail to adequately invest in prevention, we face an even more grim reality. By 2015, incidence in the United States could easily top 74,000 infections per year (compared with roughly 47,200 with NAS), and prevalence could top 1.481 million persons living with HIV (compared with 1.407 million if NAS is implemented). In particular, given that the brunt of disease burden will occur in underserved minority communities, failure to act will only exacerbate the health disparities that contribute to high premature mortality among these populations. Further, failure to implement the prevention components would mean that the cost-savings noted above would evaporate (and the larger treatment costs would not be offset by savings caused by prevention programs). Therefore, the human and fiscal consequences of ensuring that each and every NAS component is made a reality are absolutely, centrally important. The NAS is and should be viewed as an integrated package, all components of which are necessary and none alone are sufficient.

Fifth, all communities in the United States should review the NAS and determine what lessons it might contain for local leadership and strategies. As an example, the Baltimore City AIDS Commission is now reviewing how its efforts align with the NAS and determining what shifts in strategy might be prudent.

Sixth, it is important to emphasize that the NAS is (and must be) a living document.^{4,5,6} In particular, the implementation plan released on July 13, 2010, highlights important initial activities to achieve by 2011.⁵ But at some point, it will be necessary to specify how many clients will receive what kind of evidence-based service in what setting and at what intensity. Some of this detail may come from the plans to be submitted by the federal agencies in the next 150 days. The Presidential memo that accompanied the NAS rightly emphasized accountability, evaluation, and annual reporting.⁶ This review and frequent accounting will be essential to ensuring that wherever implementation strays from the best laid plans, mid-course corrections can and are swiftly made.²⁶

Clearly, the release of the NAS is only 1 chapter in the ongoing history of the HIV epidemic in the United States, and very much work remains to be done to make its goals a reality. However, if we can pull together to marshal the leadership, resources, and commitment to making the goals real, then the Strategy will have indeed changed the course of the HIV/AIDS

epidemic in the United States. Lives (and coincidentally, financial resources) will be saved. But 2015 is right around the corner given that Congress is now considering fiscal year 2011 budgets. Fiscal year 2011 funding awards potentially could be made as late as September 2011, with program implementation following, and the impact perhaps not seen until a year or so later after that. To meet the 2015 targets, decisive action must be taken urgently. On the campaign trail, President Obama often used Reverend Martin Luther King's phrase, the "fierce urgency of now." We must now collectively all employ that phrase when we act to implement the administration's new and very welcome NAS.

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