National Biodefense Science Board
Community Health Resilience Report

Introduction

The National Biodefense Science Board (NBSB) provides recommendations, through the Department of Health and Human Services (HHS) Office of the Assistant Secretary for Preparedness and Response (ASPR), to the HHS Secretary regarding actions that the Department can take to build and sustain community health resilience and help communities better prepare, withstand, and recover from disasters and public health emergencies.

Through a letter dated April 30, 2013, the ASPR asked the NBSB to explore the concepts and issues surrounding community health resilience and to make recommendations to HHS for ASPR policies and actions that will enhance and build overall community resilience. Specifically, the ASPR requested that the NBSB obtain a holistic view of the various components that impact community health resilience and narrow the scope of the topic by identifying focus areas in response to these questions:

- What domains of resilience would most benefit from federal action?
- What types of federal action would accomplish these goals?
- What actions should ASPR take to advance health resilience in communities?

To assist with this task, the NBSB formed a Community Health Resilience Working Group consisting of leading experts in the field and Ex Officio members from federal government agencies actively engaging in resilience work. The working group examined pertinent scientific literature and policy frameworks, met to engage in discussion and deliberation, and received information and presentations concerning key community resilience projects and studies currently underway.

In response to the request from the ASPR, the NBSB has developed a set of recommendations to address the scope of community health resilience and identify steps the federal government can take to advance resilience. In order to ensure that these steps are actionable, the NBSB focused on activities within the purview of HHS agencies, and—more specifically—ASPR.

The five recommendations build upon each other. The first addresses conceptual framing, the second speaks to outreach and communication, the third proposes tools and technical assistance, the fourth discusses policy alignment, and the fifth envisions a comprehensive research agenda. The recommendations summarized in this report are compiled to address each task question and are followed by a discussion of the rationale leading to each recommendation.

Task Question 1: What domains of resilience would most benefit from federal action?

RECOMMENDATION 1: The NBSB recommends that the ASPR should define community health resilience as inextricably linked with community resilience and act within the larger national emergency management enterprise to champion the domains of resilience most closely associated with promoting human health, well-being, and social connectedness.

DEFINING COMMUNITY HEALTH RESILIENCE

This report focuses on community health resilience. The NBSB's perspective recognizes that health is an integral part of the larger concept of community resilience in which many sectors contribute to the well-being of individuals and communities. It is critical at the outset to understand both the relation and distinctions between community health resilience and overall community resilience in order to identify optimal recommendations and interventions.

Resilience has long been studied by many disciplines resulting in robust discussion—though perhaps not consensus—concerning areas such as psychological, ecological, technological, economic, and critical infrastructure resilience. Research concerning *community* resilience suggests an adaptive capability involving the interplay of components such as economic development, communication, community competence, social support, population physical and psychological health, and governmental and private collaboration. Evidence of the central role of behavioral health in overall health and wellbeing, particularly following emergencies and traumatic events, is also well established. There have been efforts to examine how health fits in to the holistic framework of community resilience in the context of disaster preparedness, including the ASPR's *Community Resilience and Public Health Practice*[1] and RAND's *Building Community Resilience to Disaster: A Way Forward to Enhance National Health Security*[2].

Just as resilience is multi-dimensional, defining *community* can be challenging as well. Communities can be joined together by geographic or political boundaries, cultural or religious affiliations, or be self-defined by interests or group affiliations that may be bound by location or be supported through virtual venues such as social media. In our context, community might be best defined as any affiliation that can be leveraged to promote health, wellness, safety, and resilience in the face of emergency or disaster.

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[1] Morton, Melinda J., Lurie, Nicole. (2013). Community Resilience and Public Health Practice. *American Journal of Public Health*, Vol 103 (No. 7), 1158-1160. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3682626/

[2] Chandra, Anita, Acosta, Joie, Stern, Stefanie, Uscher-Pines, Lori, Williams, Malcolm V., Yeung, Douglas, Grant, Jeffrey, Meredith, Lisa S. (2011). Building Community Resilience to Disasters: A Way Forward to Enhance National Health Security. *RAND Technical Reports: Health*, 1-78. http://www.rand.org/content/dam/rand/pubs/technical_reports/2011/RAND_TR915.pdf

The NBSB believes that a clear definition of community health resilience can have significant use to researchers, health policy leaders, health care professionals, and emergency planners. It will assist researchers as they seek ways to understand the concept of resilience and how it may be applied in practice. It will provide health policy leaders and health care professionals with an understanding of the context in which policy may be developed as resilience becomes one of the organizing principles for community health. It will also aid planners to operationalize health resilience to prepare for, respond to, and recover from disasters and public health emergencies.

While a definition is a helpful foundational step, it should not delay more important federal actions to operationalize and implement health resilience in communities. In practice, a definition of community health resilience has far less value to community stakeholders who are not part of the public health, medical, or emergency management communities. Mayors, business owners, and civic leaders are generally not interested in the nuance of resilience definitions, but they are very concerned about the wellbeing of their communities. They need answers to simple but important questions: What does health and resilience look like in my community? What practical steps can I take to make my community more healthy and resilient and what tools can help me do this? What does my community gain from the effort?

The National Health Security Strategy (NHSS) has defined community resilience as "the sustained ability of communities to withstand and recover—in both the short and long terms—from adversity" (NHSS, 2009)[3] and has discussed resilience in regards to health in both the strategy and implementation plan documents. ASPR through presentations, supporting materials, and numerous remarks in public fora from the Assistant Secretary has begun to effectively forward *community health resilience* as a distinct concept. In this usage, the term refers to the aspects of resilience that apply to individual and community health, behavioral health, and societal well-being. Community health resilience is a sub-set of community resilience, but it encompasses quite a broad area given the interrelated nature of health with other domains of resilience.

Despite these efforts, community health resilience may still be described as an emerging idea. While resilience is understood subjectively by most, community health resilience is not understood by the majority of the American public or key stakeholders. The development of a national culture of resilience includes the substantial challenge of educating and informing all of those who will work together to make it happen. This process is made easier with clear definition and consistent information from all levels of government. The board believes that ASPR, the Department, and its partners should establish a clear definition of community health resilience and provide affirmative policy guidance based upon the following guiding themes.

GUIDING THEMES IN COMMUNITY HEALTH RESILIENCE

A key challenge with community health resilience is to maintain the holistic, interrelated strengths of the concept while also targeting actions that have operational, real world

[3] Sebelius, Kathleen. (2009). National Health Security Strategy of the United States of America. *Department of Health and Human Services*, 1-43. http://www.phe.gov/preparedness/planning/authority/nhss/strategy/documents/nhss-final.pdf

results. These guiding themes for community health resilience discussed by the NBSB's Community Health Resilience Working Group may prove helpful in this regard:

Community health resilience is inseparable from community resilience. Community health resilience refers to the aspects of resilience that apply to individual and community health, behavioral health, and societal well-being within the overall holistic framework of community resilience.

Health underpins all other resilience sectors. Any activity undertaken by any sector involved in preparedness, response, or recovery ultimately aims to protect or improve human health and well-being.

Community health resilience involves stepping beyond the traditional health system and promoting whole community networks that include social services, behavioral health, community organizations, business, academia, at-risk individual[4], and faith-based stakeholders in addition to traditional public health, healthcare, and emergency management partners.

Community health resilience links a set of adaptive capacities to a positive trajectory of functioning and adaptation to promote and protect individual and collective health after a disturbance (Norris, et. al). Creating an environment that promotes positive individual and communal adaptation (rather than solely developing static preparedness capacities) is a distinguishing feature of resilience.

Building social connectedness (or social capital) is a legitimate and important emergency preparedness action. Social connectedness is central to the ability of a community to withstand disaster and rebuild both the infrastructure and the societal ties that are at the foundation of any community (Aldrich, 2012)[5]. These efforts can include promotion of community engagement, volunteerism, and increasing access to information and training to empower individuals to assist their neighbors and communities following incidents.

Community health resilience happens at the community level. The whole community of stakeholders must be actively involved in developing plans. Governmental efforts require engagement of diverse partners with direct ties and established trust among the individuals who live in communities and who are able to mobilize their networks to build community health resilience. Community health resilience speaks to the ability of a community to leverage its assets to care for the physical, psychological, and social health of its residents.

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[4] Before, during, and after an incident, members of at-risk populations may have additional needs in one or more of the following functional areas: communication, medical care, maintaining independence, supervision, and transportation. In addition to those individuals specifically recognized as at-risk in the Pandemic and All-Hazards Preparedness Act (i.e., children, senior citizens, and pregnant women), individuals who may need additional response assistance include those who have disabilities, live in institutionalized settings, are from diverse cultures, have limited English proficiency or are non-English speaking, are transportation disadvantaged, have chronic medical disorders, and have pharmacological dependency.

[5] Aldrich, Daniel P. (2012). *Building Resilience: Social Capital in Post-Disaster Recovery*. Chicago: University of Chicago Press.

Community health resilience helps people face everyday challenges as well as extreme events such as disasters or public health emergencies. Promoting health and wellness through information and education can entail public health, behavioral health, emergency preparedness, and community health resilience interventions. This approach incorporates healthcare and public health systems preparedness and then goes further by improving the capability of individuals, families, neighbors, and neighborhoods to understand their needs and take action to care for each other following major disruptions or emergencies.

Meeting the health, wellness, and emergency preparedness needs of at-risk populations, including children and elders, improves overall community resilience. Engaging individuals with potential vulnerabilities to take an active part in protecting their health and aiding their community's resilience strengthens the community as a whole.

Accessible services from robust public health, healthcare, and behavioral healthcare systems are key drivers in promoting community health resilience. Capable systems also require people who know how to access care and are not limited by real or perceived barriers to services. Strong day-to-day health and community systems can be more effectively leveraged to support health resilience during disasters and emergencies. Optimal levels of physical and psychological health and well-being within the population facilitates the community's rapid recovery.

DOMAINS OF RESILIENCE THAT WOULD MOST BENEFIT FROM FEDERAL ACTION

Domains of resilience have been identified in previous work, including RAND's levers of resilience (Wellness, Access, Education, Engagement, Self-sufficiency, Partnership, Quality, Efficiency) and the I-C-HOPE approach adapted from the ASPR's article (Infrastructure, Connectedness, Health, Organizational, Psychological, Economic). The active feature of these models is determining the activities that one's sector or organization will undertake and measure to positively influence overall community resilience.

In considering focus areas, the NBSB starts with the understanding that community health resilience is inseparable from overall community resilience. Health underpins all other sectors and domains in a central, if not unique, manner. In other words, any activity undertaken by any sector involved in preparedness, response, or recovery ultimately aims to protect or improve human health and wellbeing.

In simple terms, we concur with the definition of community resilience found in the National Health Security Strategy, "the sustained ability of communities to withstand and recover—in both the short and long terms—from adversity" (NHSS, 2009). The NBSB also generally concurs with the discussion of the attributes of resilient communities in the NHSS:

> *The vision for health security described in the NHSS is built on a foundation of community resilience— healthy individuals, families, and communities with access to health care and with the knowledge and resources to know what to do to care for themselves and others in both routine and emergency situations. Communities help build resilience by implementing policies and practices to ensure the conditions under which people can be healthy, by assuring access to medical care, building social cohesion, supporting healthy*

behaviors, and creating a culture of preparedness in which bystander response to emergencies is not the exception but the norm. (NHSS, 2009)

However, the end state described above relies on extensive cultural and systematic changes in public health, healthcare, and the underlying social determinants of health. The domains that will benefit from federal focus—that will begin to move the nation towards achieving community health resilience—must be targeted in order to be actionable. Criteria involved in the NBSB's recommendation of domains also included:

> (1) Areas where the Department has credibility and existing programmatic or policy levers;
> (2) Areas not sufficiently addressed by the overall emergency management enterprise.

Based on these considerations, the NBSB recommends that ASPR, with the support of its partner agencies, act within the larger national emergency management enterprise to champion the domains of resilience most closely associated with promoting **human health**, **well-being**, and **social connectedness**.

> **Human health** includes physical and behavioral health, the day-to-day health care systems that support individual and family health, and the public health systems that work to protect and improve population health.
>
> **Well-being** includes emotional, spiritual, and familial/interpersonal health and the family, social services, community, and faith-based systems that support well-being.
>
> **Social connectedness** refers to the engagement of individuals in the life of their communities and to the reservoirs of social capital and the trust between people and between individuals and organizations (Putnam, 2000)[6].

The selection of these domains as priority areas for renewed attention and development of innovative programming reflect the NBSB's assertion that HHS is well positioned to highlight the health and well-being of *people* in a national emergency management enterprise that often focuses on infrastructure, assets, and capabilities. Healthcare infrastructure and public health and medical response capabilities are obviously critical to national health security, but people, the groups they associate with, and the communities they form, are central to health resilience.

TASK QUESTION 2: What types of federal action would accomplish these goals?

RECOMMENDATION 2: The NBSB considers the NHSS an ideal roadmap toward the goal of achieving community health resilience and recommends that HHS resource and develop an outreach campaign, and mobilize public-private partnerships, to jointly market the NHSS and community health resilience to a wide range of potential stakeholders.

[6] Putnam, Robert. (2000). *Bowling Alone: The Collapse and Revival of American Community*. New York: Simon & Schuster.

THE NHSS AS ROADMAP

The board recognizes that building a culture that values community health resilience is an ongoing process that must have continuous growth and understanding from each citizen; from community, state, and federal leaders; and from the President of the United States of America. A national paradigm shift requires a national strategy to guide it. To this end, the next quadrennial cycle of the NHSS (2015-2018) and its implementation plan must be considered ASPR's roadmap toward the goal of community health resilience.

The 2009 NHSS is built on a foundation of community resilience. Its implementation plan has as its two main goals building community resilience and strengthening and sustaining emergency response systems. The NBSB recommends that the NHSS continue its focus on community resilience during the next quadrennial cycle and clearly describe the conceptual framework for community *health* resilience and the actions needed to forward this goal. In simple and compelling terms, the section on community health resilience within the NHSS must define it, explain why it is critical, and describe how the federal government will grow interest from the American public, the health system, and the professional organizations that are necessary to make community health resilience a reality in the future. The board also encourages the NHSS to speak strongly to the needs of at-risk individuals, including children and elders. The care, support, and recovery of these individuals are at the heart of healthy and resilient communities.

Moreover, the NHSS and community health resilience should be definitively linked to promote conceptual clarity as well as practical implementation in a resource-limited environment. This linkage should extend to marketing, messaging, guidance and technical assistance, and funding requests.

The board also recommends continuing to use the "bully pulpit" of federal leaders, in particular the ASPR, to bring the message of community health resilience and national health security to new whole community stakeholders as well as the traditional national emergency management and public health enterprise. Congress and the Executive Branch must also be educated to understand community health resilience and national health security as they have other national endeavors such as the Affordable Care Act (ACA). ASPR should collaborate with existing related federal initiatives as much as possible to promote coordinated messaging.

OUTREACH CAMPAIGN

The recommended vehicle to achieve stakeholder and public awareness of community health resilience and national health security should be a multi-year outreach and social marketing campaign. This campaign would promote public understanding, discussion, innovation, and collaboration based on the notion that through individual and collective effort the nation's communities can be better protected and more resilient—and that health is a key component in accomplishing this goal.

The sense of individual and collective effort in service of the good of the community is a core founding principle of the nation. The power of collective strength and effort is a notion around which the nation can rally in support of protecting and promoting inter-related concepts of community, health, security, and resilience. Central to these concepts is that health is necessary for resilience and health is a national security issue.

Threat takes many forms. The iconic types of threat agents (e.g., wind, water, fire, earthquake, terrorism, pandemic) are well known and most of the population is at least marginally knowledgeable and accepting of these as threats to communities. They are less aware that communities face ongoing threats to protecting the community's health such as climate change, economic downturn, civil unrest, health disparities, and interpersonal violence. An outreach and social marketing campaign will raise awareness of health as something to be protected and that in the process of promoting and protecting the public's health we are making communities stronger, more secure, and more resilient.

The NBSB recognizes that an outreach and social marketing campaign will need to be scalable depending on resources. However, in order for the undertaking to be successful it must be reasonably resourced to:

- Review successful elements of other outreach and social marketing campaigns used in HHS and within the national emergency management enterprise;
- Develop, modify, and adapt promising strategies;
- Meet longer-term goals through a multi-year project;
- Identify and engage with concurrent national initiatives, such as America's PrepareAthon and annual influenza messaging, to integrate and complement efforts;
- Provide direct communication via mail, Web, and social media to a wide range of healthcare, social services, and emergency management stakeholders at the community and practitioner levels;
- Have sufficient communications and Web development assets;
- Engage in public-private partnership; and
- Evaluate success and make recommendations.

Regarding public-private partnerships, the NBSB is referring to developing formal relationships with community organizations, businesses, philanthropic societies, academia, faith-based groups, and other partners. This process is more resource intensive than typical stakeholder engagement, but potentially yields greater benefits especially when trying to bring ideas to national scale. The campaign also calls for direct communication via mail, Web, and social media at the community and practitioner level. This augments the existing NHSS marketing approach of working through public health and healthcare associations and represents a more effective, but more costly, outreach strategy.

While the campaign will primarily promote understanding and encourage individuals and groups to take action, an ideal project will also have the ability to spur innovation by sponsoring model community health resilience/national health security projects and documenting and publicizing the results. The outreach campaign provides the mechanism for national level change, but is supported by the guidance, tools, and technical assistance discussed in the board's third recommendation.

RECOMMENDATION 3: The NBSB recommends that HHS sponsor an interagency effort to provide guidance, innovative tools, and technical assistance to support communities as they assess their vulnerabilities, take actions to enhance their health resilience, ensure the needs of children and other at-risk populations are met, and evaluate their effectiveness.

The board recognizes that the growth of community health resilience is a long-term national process that benefits from federal support and facilitation but is best implemented at the community level. National public health officials cannot realistically expect to create community health resilience from the top down. They can at best implement national policies and programs to create an environment that facilitates, encourages, and supports the growth of health resilience in each American community.

Likewise, local public health officials and healthcare providers cannot create community health resilience in a vacuum. The whole community must be brought into the process and provided the tools and incentives necessary to excite interest and action. Private businesses must support the effort by engaging their workforces, customers, and business associates. Local government must guide the process with effective public rhetoric, policies, and practices. Non-governmental groups must contribute with their powerful ability to exert influence and marshal a volunteer workforce.

Materials and training that address issues that also can be expected to promote community health resilience exist. Work is underway to collect and categorize these promising practices, such as DHS's Community Health Resilience Initiative. However, the complexities and inter-relationships inherent in community health resilience call for an integrated approach to guidance, innovative tools, and technical assistance. This effort should include developed or compiled materials and promising practices, supported by real-time technical assistance, to help communities assess their vulnerabilities, take action to enhance their health resilience, ensure the needs of children and other at-risk populations are met, and evaluate their effectiveness. All guidance, tools, and technical assistance should be grounded on a simple, practical process that places the community at the center of their own resilience assessment, planning, and integration. The board recognizes that a comprehensive and integrated approach would require resources to fund a technical assistance center or center of excellence to provide communities with support that is flexible and adaptive to local context and needs.

The guidance promulgated should highlight local, bottom up initiatives which deepen social ties and increase social cohesion in vulnerable communities and include tools that bring together all elements of the community such as local government, private businesses, non-governmental associations, and faith based groups. Combinations of education, simple practical programs, and appropriate and targeted incentives for all groups to participate and sustain the effort should be explored. The program could also establish a clearinghouse for related community health resilience information including academic articles, model programs, and targeted resources.

The needs of at-risk individuals should feature strongly in community health resilience guidance and information. Despite important advances made by HHS and other partners, concerns for at-risk individuals remain including the prevention of physical and psychological injury and illness in young children following disasters, the support of medically fragile individuals cared for in the home, and emergency planning for community-based social service and behavioral health providers. Regarding children, the NBSB recognizes that the development of State and community plans that promote safety for children post-disaster are an important tool to forward community health resilience. There are opportunities for ASPR and Administration for Children and Families (ACF) to establish key partnerships that will promote planning for safe spaces for children post-disaster,

including emergency child care and effective supports for reconstitution of the steady-state child care capability. There also may be opportunities for the Substance Abuse and Mental Health Services Administration (SAMHSA), ACF, and the Federal Emergency Management Agency (FEMA) to partner to conduct outreach and assess current needs to encourage state, territorial, and tribal disaster behavioral health planning that includes recommendations for incorporating community and home-based child care and community care centers into plans and exercises.

The NBSB believes that the Department is well positioned to use the implementation plan for the NHSS to establish an interagency mechanism to create a common set of guidance, innovative tools, and technical assistance. As discussed, this would include processes and resources that can be tailored and used by any community in the United States to enhance its health resilience. An interagency collaboration, grounded in a technical assistance program or center of excellence, could help federal agencies provide increasingly sophisticated technical support to guide constituents to build health resilience as well as allow communities to directly access a suite of guidance and tools.

Like the earlier recommendation for an outreach and social marketing campaign, this process must be envisioned as a multi-year effort. Outreach is important to raise awareness and begin paradigm change; easily accessible practical tools are needed to sustain advances in community health resilience; and an integrated system for monitoring the use, uptake, and integration of information will allow HHS to track progress and make adjustments to the framework.

TASK QUESTION 3: What actions should ASPR take to advance health resilience in communities?

RECOMMENDATION 4: The NBSB recommends that ASPR lead an effort to definitively link community health resilience policy to other national preparedness or health initiatives—such as ACA implementation—by embedding health resilience language and metrics into existing plans, grants and cooperative agreements, policies, and requirements and examining ways to incentivize communities to pursue health resilience.

Community health resilience links health response in emergencies to health response in day-to-day community functioning. It is critical that resilience is also part of usual community health activities, namely ACA requirements for community health needs assessments, hospital performance standards, public health department accreditation, and preparedness grant and cooperative agreement requirements. Federal policy alignment and affirmative policy language can provide communities with a guide on how to approach community health resilience policy and strategy development in their states and localities. Just as any preparedness, response, or recovery activity ultimately aims to protect or improve human health and well-being, human health is also inseparable from broader policy vehicles. The NBSB affirms a "health in all policies" approach and further advocates that community health resilience be appropriately included in all policies and plans created by the national emergency management enterprise.

ASPR should lead a process to assist the federal government to support community efforts by incentivizing, documenting, and evaluating simple, practical programs of education and intervention that can be used by any community of any size. This involves determining what incentives are currently available or may be created to encourage each sector of the community to support community health resilience. Incentives could include ties to federal grants or disaster reimbursements, tax deductions, or even a community health resilience ranking or certification system that can cause public and private officials to see the immediate value of increasing their community's overall health. The implementation plan for the next quadrennial cycle of the NHSS should establish a mechanism to explore how ASPR can lead these efforts.

Federal entities will also need to be coordinated so that federal preparedness grant and cooperative agreement programs align in their objectives and collectively lead to the sustained development of governance structures that bring private, public, nonprofit, and civil society actors together to promote community health resilience. Such efforts could encourage community stakeholders to engage in joint problem solving around incidents that could have major health consequences.

Policy alignment and affirmative policy guidance are useful ends in and of themselves, but sustainable and measurable progress will not be achieved until policy language translates into grant/cooperative agreement, licensing, and accreditation requirements with associated metrics. HHS has unique mechanisms for reaching these goals because of Medicaid and Medicare, ACA, and community health needs assessment requirements as well as the Public Health Preparedness and Hospital Preparedness cooperative agreements led by CDC and ASPR, respectively. The board was pleased to be informed that ASPR is already pursing some of these ideas regarding ACA such as working with the Internal Revenue Service to examine community health resilience as a possible way of meeting the community benefit requirement. Some other specific examples of potential action include:

- Add language about community health resilience to public health accreditation standards and nonprofit community health needs assessment requirements under ACA. Since community health needs assessment requires two elements—1) analysis of the health issues in a community; and 2) engagement of diverse stakeholders to act on the health issues—it provides an excellent opportunity for resilience discussions to occur.
- Develop health resilience metrics that could be included as part of assessments and standards. This may include more intentional assessment of items that matter to community health resilience, such as capacities in Psychological First Aid, ability to engage nongovernmental organizations in mitigation activities, or presence of a coordinated long-term recovery plan.
- Incentivize building a community health resilience strategic plan.

RECOMMENDATION 5: The NBSB recommends that ASPR—working with other HHS agencies, federal departments, and non-governmental scientific organizations—coordinate the development of a coherent science agenda to promote innovation and prioritize areas for research on community health resilience.

The NBSB recognizes that building community health resilience requires an understanding of the factors that enable individuals, organizations, and populations to fully recover from

adverse events and, in some cases, to attain higher functioning and greater resilience. This understanding of key factors is vital to developing community programs, policy changes, and other interventions that will have the most positive impact. To gain this critical knowledge over the coming years, we must enhance the research agenda for community health resilience.

The concept of community resilience has gained traction over the last decade, accompanied by a proliferation of models, programs, and interventions addressing different levels (individual, organizational, community, population). An evidence base that spans multiple academic disciplines, conceptual frameworks, and factors of interest is also emerging. However, within this breadth and complexity, knowledge gaps and questions remain particularly as these relate to the newer concept of community *health* resilience:

- What attributes of a community are most important for recovery from natural disasters, pandemics, or other types of adverse health events?
- To what extent does the overall physical and behavioral health of the community contribute to its level of resilience?
- What is the relationship between individual well-being and community health resilience?
- Can we develop valid tools to measure and monitor community health resilience?
- How effective are current resilience-building programs?
- How can we most effectively build the strengths associated with rapid recovery?
- Social and economic disparities have increased significantly over the last several decades. Can these disparities be mitigated or overcome to increase community health resilience?
- Can the behaviors of notably resilient individuals and groups be taught and utilized by others?
- How can gaps in connectivity, integrated care, and coordination of services in our health care system be addressed to improve health resilience for the tens of millions of Americans who suffer from multiple chronic medical conditions?
- What can we do to increase the health resilience of vulnerable groups such as children and the elderly?
- How can we best pilot and study innovations to build social connectivity, such as community currency or time banking programs, promotion of volunteerism, and neighborhood-wide activities such as festivals and events?
- What are the current public policy drivers and are there opportunities for a more cohesive policy agenda for community health resilience?

ASPR has been a catalyst for the interagency in science preparedness work. While ASPR is not a research agency it is well placed to help coordinate a coherent science agenda to promote innovation and prioritize areas for research on community health resilience. To do this, ASPR should coordinate the development of this science agenda with other HHS agencies and components, other departments, and non-governmental scientific organizations. Once consensus is reached, ASPR (through the HHS Secretary) should convey to appropriators and agency leaders the importance of allocating sufficient funding for intramural and extramural research on community health resilience. Finally, HHS should ensure that component agencies allocate sufficient personnel to coordinate and execute scientific research on community health resilience, as appropriate to the missions of the respective agencies.

Recommendations Summary

1. The NBSB recommends that the ASPR should define community health resilience as inextricably linked with community resilience and act within the larger national emergency management enterprise to champion the domains of resilience most closely associated with promoting human health, well-being, and social connectedness.
2. The NBSB considers the NHSS an ideal roadmap toward the goal of achieving community health resilience and recommends that HHS resource and develop an outreach campaign, and mobilize public-private partnerships, to jointly market the NHSS and community health resilience to a wide range of potential stakeholders.
3. The NBSB recommends that HHS sponsor an interagency effort to provide guidance, innovative tools, and technical assistance to support communities as they assess their vulnerabilities, take actions to enhance their health resilience, ensure the needs of children and other at-risk populations are met, and evaluate their effectiveness.
4. The NBSB recommends that ASPR lead an effort to definitively link community health resilience policy to other national preparedness or health initiatives—such as ACA implementation—by embedding health resilience language and metrics into existing plans, grants and cooperative agreements, policies, and requirements and examining ways to incentivize communities to pursue health resilience.
5. The NBSB recommends that ASPR—working with other HHS agencies, federal departments, and non-governmental scientific organizations— coordinate the development of a coherent science agenda to promote innovation and prioritize areas for research on community health resilience.