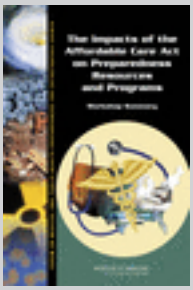

The Impacts of the Affordable Care Act on Preparedness Resources and Programs: Workshop Summary

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The Impacts of the Affordable Care Act on Preparedness Resources and Programs

Workshop Summary

Forum on Medical and Public Health Preparedness for Catastrophic Events

Board on Health Sciences Policy
Board on Health Care Services

Megan Reeve, Theresa Wizemann, Bradley Eckert, and Bruce Altevogt, *Rapporteurs*

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"Knowing is not enough; we must apply.
Willing is not enough; we must do."
—Goethe

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This workshop summary has been reviewed in draft form by individuals chosen for their diverse perspectives and technical expertise, in accordance with procedures approved by the NRC's Report Review Committee. The purpose of this independent review is to provide candid and critical comments that will assist the institution in making its published workshop summary as sound as possible and to ensure that the workshop summary meets institutional standards for objectivity, evidence, and responsiveness to the study charge. The review comments and draft manuscript remain confidential to protect the integrity of the process. We wish to thank the following individuals for their review of this workshop summary:

Elisabeth Belmont, Mainehealth
Diane Pilkey, U.S. Department of Health and Human Services
Arlene Stanton, Substance Abuse and Mental Health Services Administration
Jolene Whitney, Utah Department of Health

Although the reviewers listed above have provided many constructive comments and suggestions, they did not see the final draft of the workshop summary before its release. The review of this workshop summary was overseen by **Kristine Gebbie,** Flinders University School of Nursing and Midwifery. Appointed by the IOM, she was responsible for making certain that an independent examination of this workshop summary was carried out in accordance with institutional procedures and that all review comments were carefully considered. Responsibility for the final content of this workshop summary rests entirely with the author(s) and the institution.

Contents

1

Introduction[1]

Many of the elements of the *Affordable Care Act* (ACA) went into effect in 2014, and with the establishment of many new rules and regulations, there will continue to be significant changes to the U.S. health care system. It is not clear what impact these changes will have on medical and public health preparedness programs around the country. Although there has been tremendous progress since 2005 and Hurricane Katrina, there is still a long way to go to ensure the health security of the country, said Gregg Margolis, director of the Division of Health Systems and Health Care Policy in the Office of the Assistant Secretary for Preparedness and Response (ASPR) at the U.S. Department of Health and Human Services. There is a commonly held notion that preparedness is separate and distinct from everyday operations, and that it only affects emergency departments. But time and time again, he said, catastrophic events challenge the entire health care system, from acute care and emergency medical services down to the public health and community clinic level, and the lack of preparedness of one part of the system places preventable stress on other components. The implementation of the ACA provides the opportunity to consider how to incorporate preparedness into all aspects of the health care system. For example, how will the provisions of the ACA, such as coverage expansion, payment reform,

[1]The planning committee's role was limited to planning the workshop. The workshop summary has been prepared by the rapporteur and staff as a factual account of what occurred at the workshop. Statements, recommendations, and opinions expressed are those of individual presenters and participants and are not necessarily endorsed or verified by the Institute of Medicine. They should not be construed as reflecting any group consensus.

workforce issues, health information technology (IT), and telehealth[2] impact preparedness? How do investments in preparedness and national health security improve everyday health care? We have the opportunity to bridge two worlds, Margolis said, and bring the health care policy and emergency preparedness communities together to think about how to achieve Berwick's Triple Aim[3] of higher quality care, better population health across the country, and lower cost, with an added focus on making our nation more prepared.

WORKSHOP OBJECTIVES

On November 18 and 19, 2013, the Institute of Medicine's (IOM's) Forum on Medical and Public Health Preparedness for Catastrophic Events convened a workshop in Washington, DC, to discuss how changes to the health system as a result of the ACA might impact medical and public health preparedness programs across the nation. Workshop objectives are highlighted below (see Box 1-1).[4]

BOX 1-1
Meeting Objectives

- Explore opportunities to leverage benefits of health care reform and develop action steps that the preparedness community can take to mitigate identified challenges.
- Discuss challenges and benefits of the Affordable Care Act to disaster preparedness and response efforts around the country.
- Consider how changes to payment and reimbursement models will present opportunities and challenges to strengthen disaster preparedness and response capacities.

[2]Telehealth refers to "the use of electronic information and telecommunications technologies to support long-distance clinical health care, patient and professional health-related education, public health and health administration." Telehealth is broader than telemedicine, which generally refers to remote clinical services. See http://www.healthit.gov/providers-professionals/faqs/what-telehealth-how-telehealth-different-telemedicine (Accessed June 8, 2014).

[3]Former President and CEO of the Institute for Healthcare Improvement (IHI) and former Centers for Medicare and Medicaid Services (CMS) Administrator, Donald Berwick, described his vision for health care as a "triple aim," consisting of improving population health, improving the experience of care, and reducing per capita costs (Berwick et al., 2008).

[4]Full Statement of Task can be found in Appendix C.

- Explore potential impacts changing health care delivery infrastructure may have on disaster preparedness and response.
- Consider how impacts on the health system workforce may impact resilience, emergency preparedness, response, mitigation, and recovery.
- Explore how changes to data collected through health information technology may be used to strengthen community resilience.

BACKGROUND AND OVERVIEW

This summary discusses only the relevant preparedness impacts of ACA that were discussed at the workshop, and may not be entirely comprehensive. However, it should cut across several issues. These include cost changes, access to care, quality of care, and a shifting mindset of the health care system to focus on value-based purchasing, patient-centered medical homes, and overall population health – both in daily life and in disaster settings. Some elements that were not discussed, but are worth mentioning, are the creation of the Ready Reserve Corps through the U.S. Public Health Service, and the increased support of epidemiology and laboratory capacity for infectious diseases.[5] The Ready Reserve Corps was formed under Section 5210 and creates additional Commissioned U.S. Public Health Service Corps volunteer members who can be available on short notice to assist in emergency or routine public health missions. Section 4304 establishes an epidemiology-laboratory capacity grant program to award funding to states and local and tribal jurisdictions to improve surveillance and threat detection and build laboratory capacity (Affordable Care Act, 2010). These, and all the provisions mentioned throughout the report are compiled in Table 1-1 below for ease of reference. It is important to note that all of these provisions are in various stages of implementation, so the impacts are limited to "potential."

[5]Full text of the bill can be found at: https://www.govtrack.us/congress/bills/111/hr3590/text (Accessed June 8, 2014).

TABLE 1-1 ACA Provisions that Could Potentially Affect Medical and Public Health Preparedness Activities*

Title/Subtitle (Section)	Topic Area	Summary of Provision**	Potential Impact on Preparedness as Presented by Individual Speakers
Title 3. A. I (3001)	Hospital Value-Based Purchasing	A percentage of hospital payment would be tied to hospital performance on quality measures related to common and high-cost conditions, such as cardiac, surgical and pneumonia care	Greater emphasis on overall health of patient, prevention and wellness; greater need to demonstrate value; ensuring patient needs are met before and after hospital visit[1]
Title 3. F (3504-3505)	Regional Trauma Care	Provides funding to the Assistant Secretary for Preparedness and Response (ASPR) to support pilot projects that design, implement, and evaluate innovative models of regionalized, comprehensive, and accountable emergency care and trauma systems (3504); Reauthorizes and improves the trauma care program, providing grants administered by the HHS Secretary to States and trauma centers to strengthen the nation's trauma system (3505).	Improved everyday care and emergency reponse at a regional level can improve response in a disaster;[2,5]housing under ASPR also can allow for better coordination between preparedness and daily emergency programs.[3]
Title 3. G (2551); Title 3.B (3133)	Disproportionate Share Hospital (DSH) Allotments	Reduction in federal Medicaid Disproportionate Share Hospital Allotments at the state level, based on the assumption of increased coverage and reduced uncompensated care costs. While the statute sets forth reductions through FY 2020, the final rule applies only to reductions in FY 2014 and 2015.	For those states that do not expand their medicaid program, the coverage increase will not occur, but their "safety-net" hospitals will still lose this allotment, and correspondingly, they may have less resources to bear in a disaster.[1,16,17]
Title 4. D (4304)	Epidemiology-Laboratory Capacity Grants	Grant program to award funding to states, local and tribal jurisdictions to improve surveillance and threat detection and build laboratory capacity	Increased funding and capacity at the state and local levels for threat detection and biosurveillance[4]

Title/Subtitle (Section)	Topic Area	Summary of Provision**	Potential Impact on Preparedness as Presented by Individual Speakers
Title 5. C (5210)	Ready Reserve Corps	Ready Reserve Corps members may be called to active duty to respond to national emergencies and public health crises and to fill critical public health positions left vacant by members of the Regular Corps who have been called to duty elsewhere.	Building a network of trained professionals ready to respond in disasters who can be deployed to assist in any public health emergency and augment response.[6]
Title 5. D (5314-5315)	US Public Health Sciences Track	Increased emphasis on team-based service and merging of clinical and public health training. Public health recruitment and retention programs are also being expanded	Potential for increased and better educated workforce within public health field[6]
Title 5. F (5502)	Federally Qualified Health Center (FQHC) improvements	Expansion of Medicare-Covered Preventive Services at Federally Qualified Health Centers; Increased spending for FQHCs	Could take the burden of surge off of community hospitals (and DSH payments) if patients shift routine care visits throughout FQHC network[7]
Title 5. G. (5601)	FQHC improvements		
Title 6. D. (6301)	Patient Centered Outcomes Research Institute (PCORI)	Establishes private, non-profit institute to identify priorities for and provide for the conduct of comparative outcomes research.	Increased data infrastructure and dissemination of research findings focused on improved patient outcomes could contribute to more standardized sharing of best practices to inform[8]
Title 9. A (9007, 6033(b), 4959)	Community Health Needs Assessment (CHNA)	Imposes new requirements on 501(c)(3) organizations that operate one or more hospital facilities to conduct a CHNA and adopt an implementation strategy at least once every 3 years(9007); also added a tax penalty for failing to meet and report this requirement (6033(b), 4959)	Better awareness of community needs in an emergency and a more accurate population picture; opportunity for hospitals to partner more with public health departments to meet these requirements. [7,9]

Title/Subtitle (Section)	Topic Area	Summary of Provision**	Potential Impact on Preparedness as Presented by Individual Speakers
Title 3.A.II (3015) Title 4.D. (4302)	Data Collection, Public reporting; Understanding disparities, Data Collection and Analysis	Development of data collection standards for five different demographic factors and calls for them to be collected in all national population health surveys (4302); Requires the Secretary to collect and aggregate consistent data on quality and resource use measures from information systems used to support health care delivery to implement the public reporting of performance information (3015)	More data and information will be available for aggregate pictures of communities; more information will be available for surveillance and predictive modeling potential[4, 10, 11, 12]
Title 1.D.I (1302, 1311)	Mental Health	(1) by including mental health and substance use disorder benefits in the Essential Health Benefits; (2) by applying federal parity protections to mental health and substance use disorder benefits in the individual and small group markets; and (3) by providing more Americans with access to quality health care that includes coverage for mental health and substance use disorder services.	Individuals can have better coverage for daily mental health and substance abuse issues and after a disaster may have better access to services because they are already familiar with care and providers[9]
Title 1.G (1561); Title IV.D (4304)	Health Information Technology, Interoperability, and Standards	Requires the development of standards and protocols to promote the interoperability of systems for enrollment of individuals in Federal and State health and human services programs (1561); Requires the Director of the Centers for Disease Control and Prevention (CDC) to issue national standards on information Exchange systems to public health entities for the reporting of infectious diseases and other conditions of public health importance in consultation with the National Coordinator for Health Information Technology (4304)	While everyone is collecting data, the data may not reach potential unless they can be shared across county, state, and agency lines; standards and interoperability are key to build on HITECH Act and Meaningful Use standards[8, 13, 14]

Title/Subtitle (Section)	Topic Area	Summary of Provision**	Potential Impact on Preparedness as Presented by Individual Speakers
Title 3.F (3510); Title 3.D (3306); Title 4.A (4003); Title 4.C (4201, 4202)	Community Resilience	Patient navigator program (3510); Funding outreach and assistance for low-income programs (3306); Clinical and Community Preventive Services (4003); Community Transformation Grants (4201); Health Aging, Living well: evaluation of community-based prevention and wellness programs for Medicaid beneficiaries (4202).	Patient navigator program can assist patients in continuity of care and staying healthy between disasters; Opportunity for improved care and overall health at the community level through transformation grants and preventive services; Evaluation of community based programs could allow for improvements and ability to share lessons across cities and states.[15]

**The information presented in this table was compiled by the rapporteurs based on the presentations made by workshop speakers and highlighted through this workshop summary. Each potential impact has been referenced to the workshop speaker or speakers who discussed the relevant topic.*

**Summary items garnered from https://www.govtrack.us/congress/bills/111/hr3590/text# (Accessed June 8, 2014).

Speakers:	1	Lisa Tofil	9	Nicole Lurie
	2	Norman Miller	10	Gus Birkhead
	3	Gregg Margolis	11	Nathaniel Hupert
	4	Georges Benjamin	12	Brandon Dean
	5	Charles Cairns	13	Kevin Larsen
	6	Ellen Embrey	14	Roland Gamache
	7	Karen DeSalvo	15	Connie Chan
	8	Justin Barnes	16	Xiaoyi Huang
			17	Jack Ebeler

In a keynote address to open the workshop, Assistant Secretary for Preparedness and Response, Nicole Lurie, shared her perspective that health care delivery system reform will have tremendous benefits for preparedness, response, and recovery. For example, people with untreated chronic health conditions, including mental and behavioral health conditions, must deal with both the impact of the disaster and their ongoing condition. Often times, disaster settings can exacerbate

underlying illnesses, whether physical or mental. In addition, every disaster is accompanied by substantial impacts to individual and population mental health, and it is very hard to recover if one cannot access necessary care post-event. Together, through the ACA and the *Mental Health Parity and Addiction Equity Act of 2008* (MHPAEA), mental health and substance abuse benefits are being extended to more than 60 million people who did not previously have access to mental health care. The ACA and its implementing regulations, building on the MHPAEA, will expand coverage of mental health and substance use disorder benefits and federal parity protections in three distinct ways: (1) by including mental health and substance use disorder benefits in the Essential Health Benefits; (2) by applying federal parity protections to mental health and substance use disorder benefits in the individual and small-group markets; and (3) by providing more Americans with access to quality health care that includes coverage for mental health and substance use disorder services.[6]

Another benefit of the ACA is improved access to medications, both as a result of expanded insurance coverage and because health IT systems will support the prescribing process, regardless of where a patient may be transported to receive care. The loss of medications or the inability to refill needed medications during a disaster is a current challenge. Additionally, insurance expansion and delivery system reform will also address the issues of coverage of out-of-network care and the prohibitive co-pays often faced by people who need to evacuate an area post-event.

In terms of preparedness and resilience, Lurie said, with health reform people will be better able to care for themselves pre-event, and have access to needed services post-event. Over time, she said, improved access to care in general will lead to substantial improvements in population health, which will in turn lead to greater resilience. The term resilience has been used more often in recent disaster planning, and can have several definitions. According to a recent modified National Research Council (2012) report definition, "individual, community, and national resilience is the ability to prepare and plan for, absorb, respond, recover from, and more successfully adapt to adverse events. No person or place is immune from disasters or disaster-related losses. Infectious disease outbreaks, acts of terrorism, social unrest, or financial disasters as well as natural hazards can all lead to large-scale consequences for the

[6]http://aspe.hhs.gov/health/reports/2013/mental/rb_mental.cfm (Accessed June 8, 2014)

nation and its communities. Enhanced resilience allows better anticipation of disasters and better planning to reduce disaster losses, rather than waiting for an event to occur and paying for it afterward." (NRC, 2012). Individuals and communities that are more resilient fare better in disasters (NRC, 2012; Plough et al., 2013). Lurie also pointed out that under the ACA, in order to maintain not-for-profit status, under Secitions 9007, 6033, and 4959 of the law, a hospital must conduct a community health needs assessment and demonstrate a community benefit or be subject to a tax penalty. Preparedness and resilience are important community benefits, she said. Examples of how care organizations could have an impact on preparedness and simultaneously provide community benefit could include identifying vulnerable populations in the community; increasing public awareness and individual readiness; planning for the health facility's role in the community post-event; and redesigning health care facilities to be resilient during and after an event. This is an opportunity for coalitions to further integrate and connect hospitals with public health departments.

Provisions in the ACA can be leveraged to integrate preparedness into daily health care, and to help create stronger routine and emergency health care delivery systems that can surge to respond to disasters (Lurie et al., 2013). While many hospitals and acute care centers often run close to capacity levels on a daily basis, being able to surge in a disaster and increase staffing, beds, and other equipment to accommodate an increase in patients can be critical in any disaster response. However, while the ACA may provide opportunities and incentives for health systems to prepare, it cannot ensure that entire communities are prepared, and there is still a strong role for medical and public health preparedness programs.

ORGANIZATION OF THE REPORT

The following report summarizes the presentations from expert speakers and discussions among workshop participants. Chapter 2 provides a brief overview of how the health system is changing under the ACA. The potential impacts of ACA implementation on preparedness, response, and recovery are presented in the report relative to three main areas: the health care delivery infrastructure and financing reforms (Chapter 3), the health care workforce (Chapter 4), and opportunities through health IT (Chapters 5 through 7). Finally, the ongoing role for

public health in preparedness, response, and recovery is discussed in Chapter 8.

TOPICS HIGHLIGHTED DURING PRESENTATIONS AND DISCUSSIONS[7]

Throughout the two-day workshop, several participants highlighted many important opportunities provided by the ACA:

- the impact of coverage expansion on preparedness and how the changing reimbursement systems and incentives will affect preparedness activities;
- the use of data to help preparedness, response, and recovery;
- how existing resources can be used to improve both day-to-day operations and response during public health emergencies;
- workforce transformation and training needs; and
- opportunities for collaboration, coalition building, and relationships among health care delivery systems that may not have been involved in preparedness activities in the past.

A number of themes emerged across multiple workshop presentations and discussions on the topics above. The following themes are discussed further in the report that follows.

- **Bridging the health care and public health preparedness communities.** Many participants pointed out that the implementation of the ACA provides the opportunity to incorporate preparedness into all aspects of the health care system. Provisions in the ACA can be leveraged to integrate preparedness into daily health care, and to help create stronger routine and emergency health care delivery systems that can surge in response to disasters. It was repeated throughout the workshop that preparedness should not be thought of as separate and distinct from everyday operations.

[7]The rapporteurs' summary of main topics and recurring themes from the presentations, discussions, and summary remarks by the meeting and session chairs. Items on this list should not be construed as reflecting any consensus of the workshop participants or any endorsement by the IOM or the Forum.

- **Fostering resilience through improved access to health care.** It was noted by many participants that with expanded coverage, people will be able to receive needed routine and chronic care so they will not already be in a compromised state in the event of a disaster. Improved access to care in general will lead to substantial improvements in population health, which will in turn lead to greater individual and community resilience.
- **Continuing to care for the most vulnerable.** While the ACA and Medicaid expansion is improving access to health insurance coverage to all population segments, millions of persons will remain uninsured or underinsured. For those who are insured, plans will vary with regard to what is covered. However, 10 Essential Health Benefits are mandated to be covered in the individual and small-group marketplace.[8] With regard to impacts of the ACA on health system finances, individual participants expressed concerns about planned reductions and eventual elimination of disproportionate share (DSH) payments[9] to hospitals that serve large numbers of uninsured or underinsured. If these community members cannot receive everyday care, their general health may decline and overall community resilience could decline as well. As revenues dwindle, the ability of these safety net institutions to serve the most vulnerable people during disasters will also be impacted.
- **Proposing preparedness and resilience as community benefits under the ACA.** The ACA has a requirement for non-profit hospitals to engage in and allocate funds to activities that have a community benefit[10] (discussed further in Chapter 2). Many participants discussed how public health could leverage this requirement to improve system capacity. For example, health information exchange platforms provide a real community

[8]Essential health benefits must include items and services within at least the following 10 categories: ambulatory patient services; emergency services; hospitalization; maternity and newborn care; mental health and substance use disorder services, including behavioral health treatment; prescription drugs; rehabilitative and habilitative services and devices; laboratory services; preventive and wellness services and chronic disease management; and pediatric services, including oral and vision care.

[9]DSH payments are federal funds awarded to qualified hospitals that serve a large number (i.e., disproportionate share) of uninsured and underinsured patients and provide high levels of uncompensated care.

[10]http://www.irs.gov/Charities-&-Non-Profits/Charitable-Organizations/New-Requirements-for-501(c)(3)-Hospitals-Under-the-Affordable-Care-Act (Accessed May 10, 2014).

benefit, both directly, to the individuals whose data are housed in them, and at a population level, to public health and health care systems for preparedness.

- **Enhancing preparedness through public–private partnerships.** A few participants discussed examples of the value of public–private partnerships in achieving preparedness goals. Many collaborations that already exist for routine care could, for example, enhance public health capacity in threat assessment, immunization tracking, and medical countermeasures dispensing. Additionally, mission-critical vendor agreements could provide for the vendor's assistance in planning for and responding to an emergency. Given the emphasis of ACA on integrated and coordinated care, the importance of engaging other members of the community, including organizations, disaster responders, and mental and behavioral health service providers was also noted by many participants.
- **The evolving health care workforce.** Various participants discussed the predicted physician shortage in the face of increased access through coverage expansion, and the importance of team-based care and expanded roles for mid-level practitioners (e.g., nurse practitioners, physician assistants, midwives, pharmacists) to meet the growing demand. Examples were given of how care is increasingly being provided outside of the hospital setting (e.g., community paramedicine), and how allowing more flexibility in providing care can increase access to care and reduce the burden and costs to the health care system (e.g., through reduction of unnecessary transports to the hospital). A few participants also discussed training needs relative to the provisions in the ACA.
- **Preparedness opportunities through health IT.** There was significant discussion about health IT, its impact on everyday care, and opportunities to bring technologies such as predictive analytics and telemedicine to advance public health preparedness and response. Several speakers drew comparisons between Hurricane Katrina and Hurricane Sandy to illustrate the benefits of health IT for preparedness, planning, response, and recovery. Participants stressed that health IT should become something everyone is accustomed to using every day, not a special device or portal that is used only in a disaster.

- **Using health data to develop a better understanding of the community.** Participation in the health care system as a result of expanded coverage through the ACA means that more people are now visible to the system, and more data are available to better understand the potential vulnerabilities of the community, plan for those with specific or complex health needs, and foster individual and community resiliency.
- **Health information exchanges.** Many participants discussed the potential to improve preparedness and response by increasing the exchange of health information among health care systems, public health, and other stakeholders. Some exchanges have functionality for patients to access and enter their own health data. Participants also discussed a model of a social-health information exchange, which includes community-based service organizations, enabling providers to focus on the whole person during a disaster response and addressing acute medical needs as well as housing, shelter, and other needs that impact health. Also noted is that there is an ongoing struggle to sustain health information exchanges, and identifying sustainable revenue streams is critical.
- **Standards-based interoperability of data systems.** A major topic of discussion was the need for standards-based interoperability so that health information exchanges and other databases can communicate useful information. The concept of a national patient identifier was also raised. A challenge for interoperability is the diversity of privacy and security rules across the country.
- **Modeling and predictive analytics.** Participants described several examples of how data from electronic health records, syndromic surveillance, and other sources can facilitate modeling, predictive analytics, and real-time situational awareness that can aid effective planning and execution before an event, and provide decision support during an event.
- **Public health preparedness uses for telemedicine.** Telemedicine was highlighted as an important tool to enable the sharing of information and expertise remotely in real-time, extending workforce capacity and increasing quality of

care. Individual speakers noted that telemedicine can help reduce disparities in care due to geography, improve triage and transport decisions, and in the case of toxins and infectious agents, reduce the number of providers being directly exposed at the scene.

- **Continuing role for public health.** Although the ACA provides opportunities and incentives for health systems to prepare, several participants stressed that it cannot ensure that entire communities are prepared, and there is still a strong role for coordinating and collaborating across the entire spectrum of medical and public health preparedness programs.

2

How the ACA Will Change the Health Care Delivery System

Highlights of Main Points Made by Individual Speakers[1]

- There will still not be universal coverage under the current reform; recent projections are that 30 million Americans will still lack coverage by 2016.
- There will be significant gaps in coverage in states that opt not to expand Medicaid eligibility, potentially leaving 6 million uninsured nonelderly adults without access to care specifically due to lack of expansion. In addition, undocumented residents and those who opt not to purchase coverage will also add to the coverage gaps.
- *Affordable Care Act* payment reforms are changing the emphasis from volume-driven to value-driven reimbursement based on meaningful outcomes measurements, incentivizing high quality, safe, efficient, and cost-effective care.
- A fundamental change in delivery reform is a shift in care management and infrastructure to a system that is more collaborative and integrated.

Key features of the *Affordable Care Act* (ACA) are access to health care through expanded coverage, improved quality and efficiency and lower health care costs, and consumer protections. Incremental reforms have been made to the ACA since it was passed in 2010.[2] Although these key features ideally will contribute to communities being not only healthier overall, but also more resilient in disasters, some important

[1]This list is the rapporteurs' summary of the main points made by individual speakers and participants, and does not reflect any consensus among workshop participants.

[2]For further details and timeline see Appendix F, or http://www.hhs.gov/healthcare/facts/timeline/timeline-text.html (Accessed June 8, 2014).

gaps will remain that could impact this level of community resilience. For example, expanded coverage will not be universal coverage, because some states are electing not to expand their Medicaid programs, and the change in care management will not happen overnight, as all of the speakers point out in this chapter. Comprehensive changes that take effect in 2014 were summarized by Jack Ebeler, principal, Health Policy Alternatives (see Box 2-1). Understanding the reforms and details of the law can help to clarify how preparedness programs should adapt to the changing health care delivery landscape. This chapter will summarize many of the larger changes to the health system, including laws that the ACA is building on, such as the *American Reinvestment and Recovery Act* (ARRA)[3] and the *Mental Health Parity and Addiction Equity Act of 2008* (MHPAEA).[4] In later chapters, the summary will discuss the potential impact these new provisions may have on preparedness efforts.

BOX 2-1
Highlights of the *Affordable Care Act* Coverage Provisions Effective in 2014

Health insurance exchanges

- The mechanism for organizing the individual and small group insurance markets and administering subsidies. The health insurance marketplace includes state-based exchanges and a federally facilitated exchange for residents of states not implementing an exchange.

Insurance market reforms:

- Incentives for private insurers to compete in the exchanges and offer low premiums. Limits on factors that can be used to vary rates. Cannot refuse coverage for preexisting conditions.

Shared responsibility

- Individual mandate (requiring all citizens to have minimum essential coverage or face a penalty).
- Large employer mandate, requiring employers with more than 50 full-time employees to provide health insurance, or pay a "free-rider" penalty if an employee purchases coverage through an exchange and receives a premium tax credit (e.g., because they were not offered coverage or it was not affordable).

Benefits

- Essential health benefits (service categories that must be covered by marketplace insurers). These must include items and services within at least the following 10 categories: ambulatory patient services; emergency services; hospitalization; maternity and newborn care; mental health and substance use disorder services, including

[3]For more on ARRA, see http://www.recovery.gov/arra/Pages/default.aspx (Accessed June 8, 2014).

[4]For more on MHPAEA, see http://www.dol.gov/ebsa/newsroom/fsmhpaea.html (Accessed June 8, 2014).

behavioral health treatment; prescription drugs; rehabilitative and habilitative services and devices; laboratory services; preventive and wellness services and chronic disease management; and pediatric services, including oral and vision care
- Cost-sharing standards.

Insurance affordability programs
- Medicaid eligibility expansion to include adults under age 65 up to 133 percent of federal poverty level (per Supreme Court ruling, states can refuse to implement this provision without penalty).
- Income-related sliding-scale subsidies for those purchasing insurance in the exchange.
  - Advance payment premium tax credits (limits premiums as a percent of income).
  - Cost-sharing reductions (lower out-of-pocket spending).

SOURCE: Ebeler presentation, November 18, 2013.

Additionally, although in effect prior to 2014, one ruling that is notable for preparedness efforts previously mentioned by Lurie is the New Requirements for Charitable 501(c)(3) Hospitals. Section 501(r), added to the Internal Revenue Code by the ACA. It imposes new requirements on 501(c)(3) organizations that operate one or more hospital facilities (hospital organizations). One of the requirements is to conduct a community health needs assessment (CHNA) and adopt an implementation strategy for addressing the prioritized health needs at least once every 3 years. (These CHNA requirements are effective for tax years beginning after March 23, 2012.) The ACA also added section 4959, which imposes an excise tax for failure to meet the CHNA requirements, and added reporting requirements under section 6033(b) related to sections 501(r) and 4959.[5] This requirement is an opportunity for community hospitals to partner with public health departments and further within coalitions to collectively assess their community needs, allowing for a more comprehensive population health picture, which is often needed in a disaster situation.

[5]http://www.irs.gov/Charities-&-Non-Profits/Charitable-Organizations/New-Requirements-for-501(c)(3)-Hospitals-Under-the-Affordable-Care-Act (accessed June 8, 2014).

COVERAGE EXPANSION

Lisa Tofil, partner at Holland and Knight, explained that expansion of health care coverage under the ACA is achieved by expansion of Medicaid eligibility up to 133 percent of the federal poverty level;[6]

- Health benefit exchanges, with premium support for those between 100 and 400 percent of the federal poverty level;
- an individual mandate that requires people to purchase insurance (or pay a penalty);
- an employer mandate that requires businesses with more than 50 employees to provide health insurance to their employees; and
- a small-business tax credit.

In 2012, in response to a constitutional challenge to the ACA, the Supreme Court upheld the individual mandate, but the Medicaid expansion became optional for states. As a result, there may be significant gaps in coverage in states that decide not to expand their Medicaid programs, Tofil said. People between 100 and 133 percent of the federal poverty level in any state can get the sliding-scale subsidy when selecting coverage in the federal health exchange, Ebeler explained. But those below 100 percent of the poverty level and above current Medicaid coverage limits will have no source of subsidy in the states that are not expanding their programs. As of fall 2013, about half of the states are not moving forward with Medicaid expansion (Kaiser Family Foundation, 2013), which could leave as many as 6 million uninsured, non-elderly adults without access to coverage. Ebeler said it is important to consider implementation of the ACA over the longer term, pointing out that when Medicaid went into effect in 1966, only 26 states participated in the first year, but 4 years later in 1970, nearly all states were participating. He cautioned that even with ACA, there will still not be universal coverage. Current projections show that overall, including those with lowest income living in non-Medicaid expansion states, undocumented residents, and those unwilling to purchase their own insurance, 30 million Americans will still lack coverage by 2016 (Nardin et Al., 2013).

[6]For 2013, 100 percent of the federal poverty level was $11,490 for an individual, $23,550 for a family of four.

FINANCING AND DELIVERY REFORM

As summarized by Ebeler, there are two key fundamental changes in financing and delivery underlying system reform. First, is the shift in measurement and payment, moving from discrete fee-for-service transactions (payment for each task or service that is done at each moment) to payment for clinically and economically relevant episodes for patients and providers, referred to as bundled payments. Accountability for care may be spread across provider types and over a period of time, which incentivizes those providers to work together and integrate services and provides some degree of risk transfer.

Second, there is a change in care-management capacity to favor providers over insurers in driving health care decisions. Groups of providers (e.g., Accountable Care Organizations or ACOs[7]) with access to data and information systems, and the people who can interpret those data and information, can better provide and coordinate care, and manage costs given the risk and accountability. Ebeler referred to work of the Commonwealth Fund, which suggests that it is easier to implement combinations of payment, accountability, and risk if delivery is more collaborative and integrated (Davis and Schoenbaum, 2010).

Tofil highlighted other key changes to payments for providers under the ACA. Partially through Section 3001, they focus on value-based payments to incentivize quality and safety as well as to lower use and increase efficiency. There are Medicare and Medicaid penalties for health care-acquired conditions (not limited to hospital acquired), penalties for excessive preventable Medicare readmissions, and a focus on value-based purchasing (i.e., payment is based on performance as determined by quality measurements). ACOs, which will primarily still be fee-for-service, will focus on prevention and wellness to minimize hospitalizations, readmissions, and unnecessary care use. There are also market-driven innovations in payment through various methods. Increased transparency has led to downward price pressure, tougher negotiations by employers with insurers, and a greater need to demonstrate value.

One area of payment reform that was of particular concern to some participants who spoke was cuts to the disproportionate share hospital

[7]ACOs are groups of doctors, hospitals, and other health care providers, who come together voluntarily to give coordinated high quality care to their patients More on ACOs can be found at: http://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/ACO (accessed June 8, 2014).

(DSH) payments for both Medicare and Medicaid.[8] They pointed out that the cuts to Medicaid DSH payments apply whether the state has chosen to expand Medicaid or not. This means that states that do not expand Medicaid will provide about the same level of uncompensated care to uninsured individuals, but will now receive less federal funding for that care (discussed further in Chapter 3). Many participants noted this has dire implications for safety net hospitals, especially in a disaster.

Bruce Rueben, president of the Florida Hospital Association, discussed what states are doing to prepare for payment reform, and the change in emphasis from volume-drive to value-driven payments. As background, Rueben explained that the Agency for Health Care Research and Quality (AHRQ) releases reports on quality comparing states.[9] Minnesota, for example, scores in the "strong" performance category for overall health care quality compared with other states (AHRQ, 2008). In Florida, more than 20 percent of people are uninsured, and the state scored at the low end of "average" (on the borderline of "weak") on acute care quality performance in 2008 (AHRQ, 2008). Comparing geographic variation in cost and quality, Florida fell in the high-cost/poor-outcome quadrant, or rated low in nearly every benchmark across multiple assessments by AHRQ and the Dartmouth Atlas of Health Care.[10] The board of the Florida Hospital Association set out to change this, Rueben said, and created a framework for performance improvement collaborations in areas that were particularly important to the Centers for Medicare & Medicaid Services (CMS), including reducing avoidable readmissions, hospital-acquired infections, and complications after surgery (Florida Hospital Association, 2013). These collaborations have made meaningful improvements statewide, reducing the cost of care while improving the outcome. For example, avoiding unnecessary readmissions, Rueben said, is really about improving care of the patient through the continuum. Keeping these readmitted patients out of the hospital also allows for greater bed availability in the case of an emergency or disaster when hospitals may need to surge. Through the

[8]DSH payments are federal funds awarded to qualified hospitals that serve a large number (i.e., disproportionate share) of uninsured and underinsured patients and provide high levels of uncompensated care.

[9]Reports are available at http://www.ahrq.gov/research/findings/nhqrdr/index.html (accessed June 8, 2014).

[10]The Dartmouth Atlas of Health Care is a project managed by the Dartmouth Institute for Health Policy and Clinical Practice. The project uses Medicare data to document national, regional, and local variations in medical resources and health care spending. More information is available at http://www.dartmouthatlas.org (accessed June 8, 2014).

collaborative, hospitals worked to improve hand-offs and information sharing, and established programs to help patients schedule follow-up visits and better understand their discharge instructions and medications. As a result of these initiatives, the 2011 AHRQ assessment showed that Florida's hospital care quality performance relative to other states had increased significantly, falling on the borderline between average and strong (AHRQ, 2011). Programs and collaborations like these can be the future of health care in many geographic areas if the ACA guidelines and provisions work out the way they were designed. More integrated and collaborative every day care can then be more easily translated to coordinated response and better continuity of care for patients in disasters.

With regard to preparedness, the financial pressures on health systems are immense, and incentives and demands are changing, Tofil said. For example, health systems wanting to control financial risk are looking to repatriate their patients from out-of-network facilities as quickly as possible so they can control their care, costs, or both. This could have varying effects in a disaster scenario, depending on how hospitals follow up with staffing changes in response to more open beds. There will also be much more data (e.g., data in electronic health records, population-based information on use and costs within the delivery system) that can potentially be converted into usable information. Health care delivery is changing rapidly, and adaptation is a necessity, not an option, Tofil concluded. Many changes will occur with the new health care law, and this report will highlight some of them. The ACA is not just about access, Tofil said, but about efficient, cost-effective care. Together with ARRA and MHPAEA, there are opportunities for all three laws to improve care delivery, build mental health resilience, and augment and improve information-sharing capacity to allow for better awareness of patient needs and patient tracking. All health care providers will be held financially accountable for patient safety and quality with meaningful outcomes measurements. Educated and empowered providers will do the best they can for patients. The better the system can operate on a daily basis, the better it will be able to respond when tested in a disaster.

3

Preparedness Impacts of the Changes to Health Care System Financing and Delivery Infrastructure

Highlights of Main Points Made by Individual Speakers[1]

- A key aspect of preparedness is knowing the population and preparing for their specific needs during an emergency (e.g., providing power for electricity-dependent durable medical equipment). Health information technology is highly effective in this regard.
- Increased out-of-hospital infrastructure and distributed networks of care can reduce the burden on emergency departments and on safety net hospitals, and enhance surge capacity.
- The *Affordable Care Act* (ACA) expands on the *Mental Health Parity and Addiction Equity Act of 2008* by requiring mental health and substance abuse disorder benefits in the individual and small-group markets, increasing access to needed services every day and in a disaster.
- Accountable Care Organizations need to be able to address both the health (including mental health) and social needs of those most at risk.
- With the help of ACA, health infrastructure is shifting its focus to population health management, and care systems are becoming accountable for health prior to and following health care visits.
- Broader insurance coverage leading to quicker reimbursement of hospitals could help impacted hospitals recover more quickly in a disaster.
- ACA reductions in disproportionate share payments to hospitals that provide the bulk of uncompensated or under-compensated care could compromise their ability to respond and surge when needed.

[1]This list is the rapporteurs' summary of the main points made by individual speakers and participants, and does not reflect any consensus among workshop participants.

As discussed in Chapter 2, a fundamental change underlying health system reform is a shift in care management and infrastructure to a system that is more collaborative and integrated. A key element of this evolving infrastructure is the Accountable Care Organization (ACO). ACOs are voluntary groups of health care providers (physicians, hospitals, others involved in health-related care) who work together to provide coordinated care to the patients and communities they serve, and who share collective accountability for ensuring the quality and value of that care. It will also be important during this transition to examine the effects of both the *Affordable Care Act* (ACA) and the *Mental Health Parity and Addiction Equity Act of 2008* (MHPAEA) on improvements in health outcomes due to greater mental health care access and attention to social needs as the patient care continuum becomes more of a central focus.

INTEGRATED CARE AND OPPORTUNITIES FOR PREPAREDNESS

Integrated care, including ACOs, can contribute much to public health preparedness and response. Delivery system reform also has a tremendous opportunity to impact daily emergency care, said Assistant Secretary for Preparedness and Response Lurie. Questions going forward include: What is the role of an integrated care system in daily emergency care? How is the emergency care system in a community organized now that systems such as ACOs are in place? What happens to populations not covered by these types of systems? Additionally, how will refocused integrated care address the remaining mental health and social needs of patients?

Information Technology

Lurie also described how the health information technology (IT) aspects of health care delivery reform can enable better understanding of how many people have specific issues that will need to be addressed during a disaster, and better prepare for them. (This is discussed in further detail in Chapters 5-7.) For example, electronic health records (EHRs) can be used in the aggregate to generate a picture of a community pre-event, and to facilitate real-time situational awareness during a response. She described how, during Hurricane Isaac in New

Orleans, data were mined to determine where those who had electricity-dependent durable medical equipment were located and if they might need a battery or evacuation to a site with power. Just prior to Hurricane Sandy making landfall, dialysis centers in New York and New Jersey reached out to their patients and administered treatments to more than 5,000 people as a preparedness activity. Knowing the potential for power loss and their patients' daily needs, the dialysis centers were incentivized to think about how to identify and take care of their vulnerable populations before the storm. As a result, many emergency department visits, hospitalizations, and deaths post-storm were avoided, reducing the strain on emergency rooms around the region. These are just a few examples of many categories of vulnerability that ACOs are poised to identify and prepare for, she said. Ideally, with more technology and partnerships at their disposal, health care providers could take a more proactive role in preparing their patients for health incidents or natural disasters and make sure they have an understanding of patients' needs ahead of time. Additionally, through collaboration with state and local health departments, and EMS/pre-hospital care providers, there are opportunities for better real-time assessment of needs in a systematic way to help inform resource allocation. (Some possibilities are discussed at greater length in Chapter 8).

Mental Health and Social Needs

Another area where new models of care delivery can have an impact is mental health, Lurie commented, both in the prevention of mental health crises and in delivering mental health services in novel ways after a disaster. Currently, 25 percent of uninsured Americans have a mental health condition or substance abuse disorder (Garfield et al., 2010), making them even more vulnerable in disasters than those without, as disasters would only exacerbate these types of conditions. About one third of those covered in the individual market have no substance abuse disorder coverage, and 20 percent have no mental health coverage (ASPE Issue Brief, 2011). The MHPAEA ensures parity between coverage for medical needs and mental health and substance abuse needs, which has increased access to mental health care for many. Additionally, the ACA expands this even further, requiring mental health and substance abuse disorder benefits for Americans in the individual and small-group markets (ASPE Issue Brief, 2013). It will be important to watch as these changes take place to see what needs patients will still

have in disasters, both those with and without underlying mental health conditions, and which ones may no longer need to be accounted for in preparedness planning.

After the Boston Marathon bombings in 2013, people were eager to gather and share experiences and begin to process what they had seen. S. Atyia Martin, director of the Office of Public Health Preparedness at the Boston Public Health Commission, noted that many of these group visit counseling services were not covered by insurance plans, even though 97 percent of the population of the Commonwealth of Massachusetts is insured because of a statewide mandate in 2006. Because of this gap, she said the Boston Public Health Commission's Medical Intelligence Center coordinated more than 600 hours of mental health services for thousands affected by the bombings, including over 200 sessions in the following 10 days. This highlights an important point: Any kind of insurance coverage may not equal good coverage, and gaps that remain could impact preparedness and response activities for state and local authorities (Figure 3-1). While one agency or organization might not be entirely responsible, coordination across agencies in preparedness and response activities can still help provide needed services for the population, regardless of insurance coverage.

Karen DeSalvo, health commissioner for the City of New Orleans, asserted that social needs are also important to consider. She noted that as a result of coverage expansion, more patients will enter the private health care system, especially as the public system is increasingly privatized. This means, DeSalvo said, that people who were part of the public health care system, where there is generally a better understanding of the social needs of the patients, will now be moved into systems that may not be as accustomed to considering social considerations. In times of emergency, those with limited social resources need quite a lot of help and support, but they might be isolated in their homes or might need assistance with transportation. However, if they truly become absorbed within the system, providers would have more visibility on the needs of these patients and be more equipped to handle the correct needs of different vulnerable populations in disasters. If these patients are linked to an ACO (and that ACO is therefore financially responsible for them), DeSalvo suggested that it is clearly in the best interest of the ACO to address both the health and social needs of those most at risk to ensure they have the best possible health outcomes.

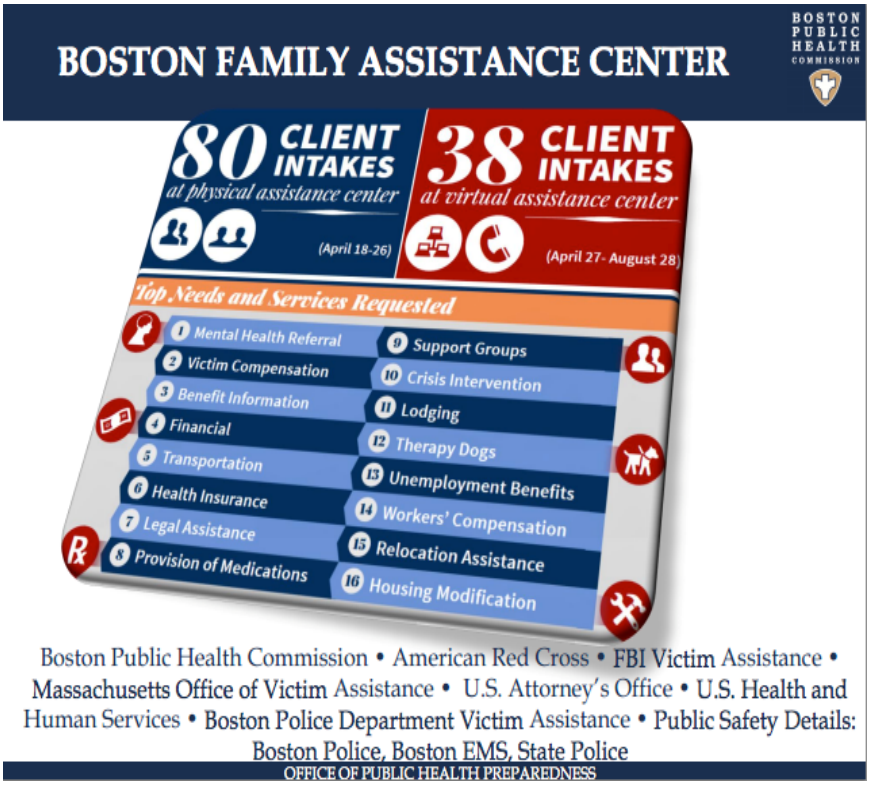

FIGURE 3-1 Needs and services requested by those affected by the Boston Marathon bombings in 2013, many of which would not be covered by private health insurance.
SOURCE: S. Atyia Martin Presentation, November 18, 2013.

Preparedness Planning

Lurie noted that the National Hospital Preparedness Program has been focusing on the development of health care coalitions, including all entities in a community that are involved in disaster planning. Groups such as ACOs need to be part of these health care coalitions, she said. Lurie added that a survey by America's Health Insurance Plans, the national trade association representing the health insurance industry, found that insurers want to learn more about their covered patients and want to be prepared for their potential needs in a disaster. From an individual perspective, preparedness plans could be part of discharge

instructions for vulnerable patients (e.g., what to do if there is power loss, where to evacuate to, where to obtain medications). In the vein of coordinated care, the preparedness instructions could be followed up on at future doctor visits, along with other discharge instructions the patient needed to follow. Additionally, wellness visits could be used to share important planning information with patients, such as maintaining a supply of medications. Again reinforcing the theme of "weaving preparedness into everyday care," including ACOs in health care coalition building and including preparedness instructions in individual patient plans can help to raise the level of awareness and education in preparing for emergencies.

PREPARING TO MEET THE NEEDS OF THE MOST VULNERABLE

Xiaoyi Huang, assistant vice president for policy at America's Essential Hospitals (AEH),[2] discussed the role of safety net hospitals in emergency preparedness, and the post-ACA outlook for these hospitals. AEH represents more than 200 public and non-profit safety net hospital systems that provide a disproportionate share (DSH) of the uncompensated care for low-income, uninsured, and vulnerable U.S. populations. These systems also provide specialized high-acuity care (e.g., trauma, burn, and neonatal intensive care) as well as a significant amount of outpatient and community-based primary and specialty care. More than half of the member hospitals operate Level I trauma centers, and one third of the members are the only source of Level I trauma care for their communities. Often, they are the only providers of psychiatric emergency medicine in the region. AEH members also have large ambulatory care networks, averaging about 20 off-campus clinic sites per hospital, usually located in the communities where the patients are. Their mission is to take care of everybody, regardless of their ability to pay.

Huang said that in addition to the written emergency plan required by the Joint Commission, member hospitals also ensure that their emergency plan includes provisions for the specific needs of vulnerable populations (e.g., those with limited English proficiency, the non-ambulatory, the chronically ill, the hearing impaired, the homeless). These vulnerable populations are taken into account as the hospitals

[2]Known as the National Association of Public Hospitals and Health Systems prior to 2013.

consider how to ensure workforce capacity and execute effective communication plans during an emergency. As mentioned previously, providers could also work directly with the patients within these populations to make sure they understand their own needs, capabilities, and resources in an emergency.

The ability to respond in an emergency or disaster depends heavily on a hospital's ability to expand to meet this increased demand, Huang said. One key component is staffing, including enough personnel (physicians, nurses, mental health staff, emergency medical technicians, public health professionals, volunteers, and non-hospital practitioners) to treat patients needing care. Huang noted that member hospitals are prepared to identify health care practitioners during a disaster, and to share pre-registered, credentialed health care professionals across state lines. In addition to staff, a hospital needs enough space and beds, and a plan to convert available beds into emergency and intensive care beds. Hospitals also need space to triage and manage patients, and may need space for decontamination and vaccinations. Some member hospitals are increasing physical capacity to surge by using associated ambulatory care sites and by transforming non-clinical community facilities.

Changes from New Infrastructure Development

Through a myriad of factors, most notably ACA, health care infrastructure is shifting to focus more and more on population health management and the non-medical determinants of health that happen outside hospital walls (ACHI, 2013), but struggling with the corresponding payment changes that need to happen as well, Rueben stated. Through altering payment mechanisms, care systems are now being held accountable for the overall health of their patient population, not just services rendered while inside their institution (ACHI, 2013). Because of this, partnering with community groups, EMS, public health organizations and others could prove a financial benefit and incentive for health care delivery. As Rueben noted, the sooner the move to population health management can occur, along with payment reform, the more coordinated health care delivery will be. If the ACA continues to encourage out-of-hospital infrastructure and is able to contribute to better coordination with community clinics and community paramedicine, there is additional potential for easier surge increase within the hospitals themselves. Huang commented that hospitals, as well as pre-hospital care providers (e.g., EMS), also need to have adequate age-appropriate

supplies on hand (medication and equipment for both children and adults, electricity, water, fuel), and be able to access patient medical records. For example, housing the EHR system in a different building with a remote hosting process in case of a regional disaster, or contracting with the state or regional health information exchange (HIE), could be an alternate source of access when needed. This is in addition to building the overall health of the population, as acute emergencies and health needs will not disappear. Again, as more health care systems move to electronic records and mobile patient portals, this part of preparedness planning and response could be easier and more immediate. Various speakers noted the burden of medical surge could be lessened through intake at various community clinics and outpatient offices, as long as patient records are fully accessible and successful provider coordination is enabled.

DISTRIBUTED NETWORKS OF CARE

Local public health departments across the country are also transforming as the Public Health Accreditation Board is pushing them away from direct service and toward a focus on population health. These system-level changes are being accelerated by the ACA, with both positive and negative implications, said DeSalvo. To illustrate, she shared some of her experiences as health commissioner for the City of New Orleans in rebuilding a more resilient, decentralized health system following Hurricane Katrina in 2005.

Hurricane Katrina affected 93,000 square miles across four states, killing over 1,800 people. Eighty percent of New Orleans was flooded, 200,000 households were destroyed, and the health care infrastructure was crippled. The 911 system was shut down due to lack of staff, failure of communications technology, and other issues. Charity Hospital, the academic health center serving most of the low-income residents of the community (most of whom were uninsured or on Medicaid) was severely damaged and will not reopen. Part of the problem, DeSalvo said, was the safety net for the city's uninsured and underinsured was geographically and financially centralized in that one hospital building downtown. Charity Hospital relied on DSH funding, and the system was not accustomed to receiving people who had insurance of any sort, public or private, and was not capable of handling traditional fee-for-service billing. When Charity Hospital closed, the large dispersion of New

Orleans patients arrived at other facilities without insurance, and in most cases, without any medical records. While this scenario is bleak, the pieces of ACA already discussed in this report show that DSH payments are disappearing, insurance coverage is expanding, and paper medical records are transitioning into electronic/cloud based records that can be accessed from anywhere. With these specific ACA changes, ideally the compounded needs that Charity Hospital and its patients had could be met in future scenarios. Additionally, although Charity Hospital will not reopen, a new $1.2 billion public hospital is being built and transitioned to a private operator, which may also help to address payment issues and familiarity with insurance billing in the future.

Services Outside the Hospital

In the wake of Katrina, New Orleans has focused on building a system that is not so geographically and financially centralized, and that would be much more resilient, not just for a disaster, but for everyday care (DeSalvo and Kertesz, 2007). The city is increasing out-of-hospital infrastructure, and creating a distributed network of neighborhood-based clinics that can help to decrease the dependence on safety net hospitals. She noted that these neighborhood-based clinics, the patient-centered medical homes, were modeled after the team-based medical response to Hurricane Katrina. These clinics could be supported by programs such as the Federally Qualified Health Center (FQHC) program. Under various provisions,[3] ACA will also support FQHCs by adding preventative services to the Medicare payment rate and eliminating the outdated Medicare payment cap on FQHC payments, making this a viable option for distributed clinics (Riley et al., 2012). The neighborhood clinic model reduces the need for patients to travel downtown and wait in long lines to be seen in the emergency department, and importantly, reduces dependency on declining DSH funding at safety net hospitals.

DeSalvo also highlighted the importance of data in the event of disaster, including a registry of patients who may need attention quickly (e.g., those on blood thinners or cancer regimens). In the future, health care organizations could leverage existing cancer, trauma, stroke, joint replacement, acute myocardial infarction, and other registries to develop

[3]Provisions include: Requirement that qualified health plans reimburse FQHCs no less than the Medicaid Prospective Payment System (PPS) rate § 10104(b)(2); Addition of preventive services to FQHCs' Medicare payment rate § 5502(a) and; elimination of the Medicare payment cap on FQHC payments § 10501(i).

a new registry of patients who may need attention quickly during a man-made or public health emergency. There was a lot of creative work after Katrina to use claims and pharmacy data to cobble together medical records for private and publicly funded patients, she said. This laid the foundation for the state to become much more health information technology enabled, not just through EHRs, but also through HIEs. She noted that the network of neighborhood clinics and the new public hospital will use EHRs.

In addition to a stronger, more resilient and ready health care system, it became increasingly clear that a strong local health department was also essential. DeSalvo also focused on transforming the New Orleans health department from treatment focused to prevention focused, transitioning out of direct health care service toward promoting and protecting the health of people where they live, learn, work, and play, while maintaining important core functions such as emergency preparedness. This is similar to ACA's recent emphasis on population health management.

DeSalvo noted several unintended consequences of public health transformation. Downsizing has meant doing the same with less, and the move away from direct service means there are less clinical staff. The new model focuses on environmental, system, and policy-level change, but it does not include safety net services. The ACA is accelerating that change because theoretically, the need for public health clinics should decline. However, there will still be people who are uninsured, and they are likely to be the ones who are most vulnerable (e.g., those with mental health issues, undocumented residents). Privatization of the local safety net also diminishes the public health work force for emergencies, including pandemics. Also on a much tighter budget, hospitals have decreased flexibility to surge in response to disaster.

However, on the contrary, as DeSalvo demonstrated in her experience, there has been investment in community health centers through the ACA, which have the potential to be part of the emergency response infrastructure. Neighborhood clinics can help to reduce the burden on emergency departments, making hospitals more available for true emergency cases. With expanded coverage, Lurie said, people will be able to receive needed routine and chronic care on a regular basis so they will not already be in a compromised state in the event of a disaster, and they will have financial access to care wherever they end up. In addition, participating in a health system also means more data will be

available that can be used to identify those with special medical needs and move beyond response and recovery to fostering resiliency.

FINANCING PREPAREDNESS

Health care systems are undergoing dramatic transformations at an extraordinary pace to be able to provide the right care, at the right place and right time, and at the right cost, every day, said Charles Cairns, chair of emergency medicine at the University of North Carolina. Facilities are also expected to have surge capacity to respond to disasters and mass casualty events. The challenge, he said, is maintaining efficiency and cost-effectiveness in the current setting of increased demand and limited resources.

One of the expected benefits of broader coverage is that when patients are insured, hospitals are reimbursed faster, and hospitals that are impacted by disaster can recover faster. In her remarks, Lurie pointed out as an example that the National Disaster Medical System (NDMS) pays the medical bills of uninsured patients it transfers for care when activated. Correspondingly, as the percentage of the population that is insured increases, they will have to do this less often. The cost of NDMS in disasters can be reduced, and funds within the NDMS program can be better applied to other needed response activities.

Medicaid Expansion and Disproportionate Share Hospital Payments

In her remarks, Huang noted that while limited funding is available to states and to health care providers to support emergency preparedness activities, these funds are not enough to cover the expense of being ready. Because of the amount of uncompensated care that America's Essential Hospitals (i.e., safety net hospitals) provide, they rely heavily on programs such as DSH funding in both Medicare and Medicaid. As mentioned in chapter 2, ACA financing reforms include cuts to funding for DSH payments (under the assumption that increased coverage will lead to less uncompensated care), and these cuts will be particularly challenging for states opting not to expand Medicaid eligibility. Federal funding for Medicaid DSH payments will be reduced by $18.1 billion by 2020 (CMS, 2013; Neuhausen et al., 2013). The formula used for Medicare DSH payments to hospitals will evolve toward distribution

based on uncompensated care, but Medicare DSH payments will be reduced by about $22.1 billion over the same time period. More Medicare cuts are expected, and states continue to face fiscal pressures on Medicaid programs. When 75 percent of the care delivered by safety net hospitals is to patients who are eligible for a government program or uninsured, Medicaid DSH is by far the largest source of support for these hospitals in terms of uncompensated care, with Medicare DSH a close second, Huang explained. State and local support are less and less reliable as many states undergo fiscal pressures, which present a difficult challenge to safety net hospitals in those states that do not expand the Medicaid program.

As hospitals face these cuts, coverage expansion under the ACA will increase demand, and the impact of adding covered lives through marketplace plans remains to be seen. As Ebeler explained, many individuals with low incomes will be eligible for tax credits to help with affordability of premiums, and additional subsidies to help with cost-sharing responsibilities. However, should these patients not be able to pay the cost-sharing that is their responsibility, public hospitals will continue to incur uncompensated care, which will put them at a greater disadvantage if a disaster occurs and they cannot bill insurance companies for the care provided. Careful planning and money-saving measures based on patient populations could help hospitals and health clinics avoid these situations. However, it will demand attention from hospital administrators and emergency planners, and success will be difficult to measure until a disaster does occur. Another unknown highlighted by individual speakers is what reimbursement rates member hospitals will be paid by the qualified health plans in the insurance marketplace. Finally, even with coverage expansion as mentioned previously, millions are still expected to be uninsured. Clearly their needs will continue, and Huang assured that AEH members and safety-net hospitals will continue to treat them. However, without rational or sustainable funding, the ability to rise and serve when most needed will be compromised.

Readying Trauma Systems

Another concern, raised by Norman Miller, trauma system administrator for the Mississippi State Department of Health, is the potential impact of the penalties under the ACA Hospital Readmission Reductions Program or the “30-day readmit rule” may have. If, for

example, a trauma, ST elevation myocardial infarction, or stroke patient is successfully discharged and then has a traffic accident or other unrelated health incident, he or she will be back at the hospital, Miller said, and the hospital can be penalized for this readmission. An important related provision, Sec. 3504 on Regionalized Systems for Emergency Care would amend Public Health Service Act Sec. 1203 to transfer the administration of the grant program for development of trauma care systems to the Office of the Assistant Secretary for Preparedness and Response (CRS, 2010). This could help coordinate routine emergency care services even more, while potentially improving outcomes in an acute disaster requiring robust regional surge response. This section also directs the Secretary to expand and accelerate basic science, translational and service delivery research on emergency medical care systems, and emergency medicine, including pediatric emergency medical care (CRS, 2010). Taken together, individual speakers noted these provisions could have significant impacts on the trauma care that hospitals will be able to provide in the future, and the potential for regional emergency response.

4

The Evolving Health Workforce

Highlights of Main Points Made by Individual Speakers[1]

- Care is increasingly being provided outside of the hospital setting, and mid-level practitioners (e.g., nurse practitioners, physician assistants, midwives, pharmacists) are beginning to take on expanded care roles in health care and public health, in some cases becoming the medical home for many patients.
- Leveraging non-physician clinicians can go a long way toward alleviating projected physician shortages.
- An emerging care paradigm, referred to as mobile integrated health care practice or community paramedicine, centers on the concept of patient navigation to reduce preventable emergency department visits and readmissions, and increase capacity of the health care system.
- Medical and public health preparedness programs could look to the military for lessons learned regarding successful team-based medical care and training providers in decision-making under stress.

As the *Affordable Care Act* (ACA) is implemented and the health care infrastructure evolves, the U.S. health care workforce is also changing. A key aspect of this transformation of health care delivery is the preparation of the workforce for expanded roles, and training for positions that did not exist before, said Cairns of the University of North Carolina. As the demand for care increases, how many providers will be needed, in what roles, and in what geographic distribution (rural, urban,

[1]This list is the rapporteurs' summary of the main points made by individual speakers and participants, and does not reflect any consensus among workshop participants.

suburban)? What are the workforce delivery models that will provide high-quality, efficient, effective, and low-cost care, and meet the needs of patients within a population across a defined geography, both routinely and in disasters? This chapter assesses what the current workforce looks like, and how the ACA is establishing opportunities for expanded roles, new directions, and training needs to supplement expanded scopes of practice and ensure full availability of care across providers in a disaster.

WORKFORCE IMPLICATIONS OF NEW CARE SETTINGS

New care delivery models are being developed to meet the needs of the growing number of covered individuals seeking care, under the new paradigm of value-based reimbursement Cairns explained. One example is community paramedics responding to 911 calls and providing direct care on-site. They are frequently able to direct patients to alternative care settings (i.e., somewhere other than the emergency department). Another example is a new category of providers called extensivists: hospital physicians who also practice outside of the hospital (e.g., at outpatient clinics, skilled nursing facilities) with the goal of facilitating care after hospital discharge and reducing readmissions.[2] There are new care settings designed to bring care to people where they live, such as free-standing emergency departments that are not associated with hospitals, urgent care centers opened by insurers, minute clinics, and a variety of others, he said. As discussed previously, there is also a significant focus on the use of telemedicine and the ability to provide remote consultation and care for patients, both routinely and in disasters (telemedicine is discussed further in Chapter 5).

[2]Described in an Agency for Healthcare Research and Quality Health Care Innovations Exchange article at http://www.innovations.ahrq.gov/content.aspx?id=2903 (accessed June 8, 2014).

Current and Future Assessments of Health Care Workers

The United States has nearly 15 million health care providers,[3] accounting for about one in nine U.S. jobs, said Ani Turner, deputy director of the Center for Sustainable Health Spending at the Altarum Institute (Turner and Hughes-Cromwick, 2013). About 30 percent are employed in hospitals, about 45 percent are in various ambulatory settings (e.g., home health, physician offices, clinics), and just over 20 percent are in nursing and residential care. About 30 percent of that workforce is not a health care practitioner or a health care support person, but an administrative, business operations, facilities, or other non-health–trained person. The health sector, which has been an engine for job growth through recessions and recoveries, has grown by 1.5 million persons since December 2007, compared to non-health jobs which are down by 3 million since then. Most of the growth has been in the ambulatory settings, including home health care.

Implementation of the ACA will result in increased demand, with a resulting strain on the system, Turner said. There will be some workforce supply constraints, particularly for those professions that have a long lead time for training, as well as pressures to reduce costs, changes in incentives and the way that providers are paid, and increasing consolidation in the health care system. All of these have the potential to move us toward a more effective and efficient workforce. There is not a lack of ideas for innovative workforce models, Turner said. Rather it is a matter of whether the payment incentives can be aligned to allow for and to reward innovation.

Turner summarized how some of the health reform trends discussed are impacting the health workforce, both in the adequacy of the workforce to provide day-to-day care and the ability to flex and surge to manage increased demand in an emergency.

- **Overall growth in the health workforce across all occupations in health care delivery**. All forecasts of the demand for physician services predict shortages in the coming years. The number of physicians is increasing roughly one percent per year. Medical school enrollments are growing faster, but there is a narrowing of the pipeline when they reach graduate

[3]For a more specific listing of all occupations included in the calculation of the United States health workforce, see Tables 4 and 5 in Turner and Hughes-Cromwick (2013).

medical education. On the other hand, the number of nurse practitioners and physician assistants is increasing 5 or 6 percent per year. The educational pathway to becoming a physician is the longest of all health professions. Currently, about 75 percent of clinicians are physicians, but Turner predicted that if current trends continue, it may be closer to two-thirds in the coming decades. Leveraging non-physician clinicians can go a long way toward alleviating the projected physician shortages, Turner said.

- **Demand for services, leading to demand for workforce**. Expanded coverage under the ACA is projected to increase demand for services. In addition, the population is growing at about 0.8 percent per year, and the population is aging. The increased demand for health care from baby boomers may not be fully felt for another decade or more, Turner noted, until they reach ages 75 to 85 or older.
- **Pressures to reduce costs and changes in reimbursement**. There is continuing pressure to reduce health care spending and the rate of growth in health care spending. As a result, Ebeler added, there is a push for greater efficiency in the delivery of health care, and a move away from fee-for-service and toward methods of payment that are value-based. The incentives are changing, allowing more flexibility in providing care (e.g., team-based care, new types of health professionals, expanded training).
- **Increasing consolidation and integration within the health care delivery system**. Integration is occurring both vertically and horizontally. Physicians are grouping together into larger practices and single-physician practices are becoming rare. More practices are now owned or affiliated with hospitals. Most hospitals also now offer home health care services and hospice services. Additionally, providers are rearranging themselves with a goal of team-based care. In the context of preparedness, Turner said, greater integration would make it easier to communicate, mobilize, and coordinate care in an emergency situation.

CHANGES IN HOSPITAL OPERATIONS IMPACTING WORKFORCE

Hospitals are still the core of our surge management strategy, said Chad Priest, a senior executive advisor for MESH Coalition,[4] and the surge management platform is still based on acute care capacity. However, hospitals are evolving to focus on complex life-threatening and intensive care in emergencies, with a dwindling focus on traditional medical/surgical capacity as the revenue and payer mix to support that is just not present, he said. Most medical care such as urgent care, long-term exposure screening, non-complex "inpatient care," and medical needs sheltering (emergency shelters that can provide basic medical care to keep people out of hospitals) could now be provided in many non-hospital locations. This was also discussed in a previous IOM summary on Medical Surge Capacity in 2009 (IOM, 2010). Priest suggested the need to examine surge strategies in light of the ways hospitals are changing in response to health care reforms, perhaps relying more on alternative care facilities such as community health clinics and networks.

One area impacted by reform is operations, Priest said. As shifts in care delivery and infrastructure are beginning, along with financial strains, some jobs are being lost while others are created. Systems in some areas are losing talent and institutional knowledge while infrastructure is reorganized, and Priest cautioned that emergency management is one area that is likely to be impacted incrementally by the downward pressure on operations. For example, staff may not be released to attend emergency management trainings (as training is either not perceived as valuable, or is not specifically required to meet regulatory requirements). In many hospitals, those designated as emergency managers actually fill multiple roles (e.g., the safety officer may also be the preparedness representative, both of which are often in addition to their main clinical role). No patient satisfaction surveys are conducted for emergency management, Priest added, so it is difficult to justify this position in every hospital and staff training in this area when faced with strained budgets.

[4]MESH is a nonprofit, public–private partnership focused on enabling health care providers to respond effectively to crisis events and remain viable through recovery. MESH does clinical education and training for providers, community-based planning, health care intelligence, and policy analysis.

The positive side of this downward pressure on operations is that hospitals will have to think differently about what it means to manage surge. It will be less about how many beds or how many staff can be made available, and more about pooling of shared services. As an example, Priest said that hospital systems in central Indiana recently purchased a linen services company and now provide themselves with their own linen services. He suggested that hospitals might also pool together to provide emergency management support to one another in much more meaningful and direct ways. "We are not used to talking about emergency management as a commodity," Priest said, "but there is an opportunity here." As highlighted in earlier chapters, the emphasis of ACA on coordination and out of hospital infrastructure could help to spur innovation in rethinking surge management capacities.

OPPORTUNITIES FOR NEW PROVIDER ROLES IN HEALTH CARE AND PREPAREDNESS

Under the ACA, health care is becoming more integrated and care is increasingly being provided outside the hospital setting. Mid-level practitioners (e.g., nurse practitioners, physician assistants, midwives, pharmacists, etc.) are beginning to take on expanded care roles in health care and public health, and in some cases are becoming the medical home for many patients. There is a new focus on a team care approach, and to achieve this, Priest suggested looking to the military for lessons, adding that, "the military is one of the few places where team care has been extraordinarily implemented for a very long time." Ellen Embrey, managing partner at Stratitia and former deputy assistant secretary of defense, added that planning for the health needs of the population involves setting up structures and a concept of operations that defines the roles for each element of the health care team, how they will accomplish their roles, and what information is necessary to coordinate care across the elements of the team. She agreed that the military has done this consistently for many years.

Mobile Integrated Health Care: Community Paramedicine and Patient Navigation

As an example of new provider roles in the community, Matt Zavadsky, of the MedStar Mobile Community Health Program,

described how MedStar is evolving from an emergency medical services (EMS) organization into a mobile integrated health care organization, and how this has impacted the workforce and local community. With the ACA emphasis on shifting the payer matrix (the way that different payment and reimbursement models are set up within healthcare) and moving away from a fee-for-service model, as well as the population health management focus, employing providers within the community to assist in the effort to decrease 30-day readmissions and improve health outcomes could be a desirable method for the future. In addition, these paramedics and EMTs are gaining valuable knowledge of the needs of the population in their community should a disaster occur.

For years, EMS has been viewed as a transportation benefit, not a health care benefit, Zavadsky explained. Without funding, revenue has historically been generated by transporting people to the hospital, creating the incentive to use the highest cost transport available to take someone to the highest cost care facility available. Medicare and most private payers do not provide reimbursement for EMS response, triage, and treatment unless the patient is transported to an emergency department (Munjal and Carr, 2013). In its billing guide, the Centers for Medicare & Medicaid Services state, "The Medicare ambulance benefit is a transportation benefit and without a transport there is no payable service" (CMS, 2010, Chapter 10). However, the ACA and health care financing reform creates an environment for innovation, and the opportunity for a new EMS role as a mobile integrated health care practice, or "community paramedicine." As the demand for health care services increases, the Association of American Medical Colleges predicts that by 2025, there will be a shortage of more than 130,000 physicians (AAMC, 2010). There is an opportunity for EMS to help fill this gap and extend health workforce capabilities in the community, outside hospital environments.

MedStar is a governmental agency that is the exclusive emergency and non-emergency mobile health care provider (i.e., ambulance service) for over 880,000 residents in 15 cities in Tarrant County, TX. External oversight is provided by a medical control board that includes the medical directors from all area emergency departments.[5] Most calls to 911 are for true emergencies, but Zavadsky noted that more than a third of the calls received are non-emergency calls, and EMS has been a health

[5]A report on the MedStar program has been posted in the Agency for Healthcare Research and Quality Health Care Innovations Exchange, http://www.innovations.ahrq.gov/content.aspx?id=3343 (accessed June 8, 2014).

care safety net for non-emergent health care for decades. According to the National Association of State EMS Officials, there are 37 million EMS house calls per year across the country, and about 30 percent of those patients do not go to the hospital (e.g., a hypoglycemic diabetic patient who is treated on scene).

The programs in the mobile integrated health care practice are centered on the concept of patient navigation, and are designed to align incentives and risk sharing, reduce preventable emergency department visits and readmissions, and increase capacity of the health care system. Together, all of the programs of the mobile integrated health care practice are geared toward meeting the Institute for Healthcare Improvement triple aim,[6] Zavadsky said. This can build efficiencies not only in day-to-day responses, but helps to ensure health systems are not already burdened at the time of an emergency.

Reducing Non-Emergent EMS Transports to the Hospital

The MedStar Community Health Program was designed to reduce non-emergent EMS calls and connect patients to resources in the community. Regular callers to 911 (those who call 911 15 or more times in 90 days) are enrolled in the program and receive home visits from mobile health providers to educate them on alternative resources and how to better manage their health. Zavadsky said that 262 patients have been through the program since it began in 2009, and there has been a sustained 86 percent reduction in their use of 911. This translates to 989 ambulance transports to the emergency room avoided, 6,000 bed hours returned to the emergency department, and $1.2 million in payer expenditures saved. In addition, patient satisfaction with the program has been very high, he said (Figure 4-1).

Priest commented that while many tasks could be offloaded to community paramedicine or other providers from a technical standpoint, he wondered if care in the home would result in missed opportunities for a more comprehensive clinical view. Zavadsky explained that feedback to the primary care mechanism is a foundation of the program. All of the treatment decisions made on-site by the mobile health care paramedics are communicated from their primary care physician. If the primary care physician cannot be reached, the MedStar medical director will provide

[6]http://www.ihi.org/Engage/Initiatives/TripleAim/Pages/default.aspx (accessed May 10, 2014)

medical oversight or the paramedics will follow standing orders (e.g., for diuresis).

Another program described by Zavadsky is the 911 Nurse Triage, in which a specially trained nurse navigates low-acuity (or low-severity) 911 calls to the most appropriate resource. The program is funded by the hospitals, who benefit from the resulting reduced overcrowding in busy urban emergency rooms, and financially, as many of the low-acuity patients do not have coverage. About 43 percent of the patients that talk to the nurse are referred to alternate resources. Again, customer satisfaction is very high, and there are multiple potential applications for the use of this program in a pandemic or other disaster in the community.

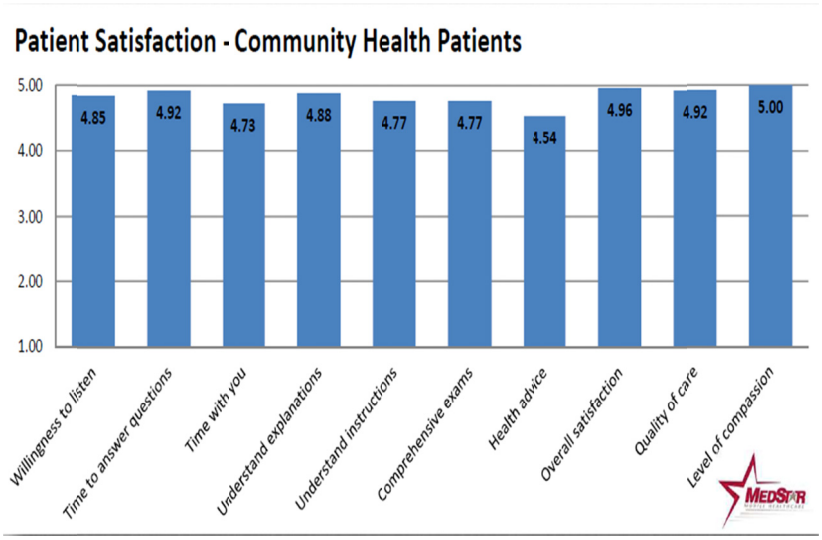

FIGURE 4-1 Results of Patient Satisfaction Survey of Medstar's Community Health Program.
SOURCE: Zavadsky Presentation, November 18, 2013

Extending the Health Care Workforce

From a workforce perspective, MedStar has been able train community paramedics and other providers who are very adept at managing patients through a health care crisis. Those mobile health care providers are able to treat those patients, refer them to the appropriate place in the field, and avoid preventable emergency room visits,

Zavadsky commented. This "navigation-ready" workforce adds value to the health care system daily, and can be ready to assess, treat, and refer in a large-scale incident as well. Other disciplines that could be trained to extend the workforce in an emergency, or on a daily basis, include medical, nursing and allied health students; home health agency personnel; or retired health care workers. Additionally, working with the state licensing agencies to identify types of healthcare professional licenses that have common or similar skill sets, organizations can facilitate expansion of the scope of practice in emergency situations, and training certain non-traditional providers *(e.g.,* ski patrollers, lifeguards, veterinarians) in emergency preparedness basic skills and procedures. Available resources can be used in multiple ways. As an example, Zavadsky described a mobile clinic acquired through a grant for the purposes of bringing flu vaccines to the community was used to transport patients following a tornado. In another scenario, ski patrollers can act as first responders off the mountain during a flood incident, another example of weaving preparedness tools into everyday care delivery and vice versa.

The Mobile Integrated Health Care program has helped the community by increasing the capacity of the hospital and the health care system, returning thousands of emergency department and inpatient bed hours, in other words, freeing up beds and staff time that were previously used because all 911 calls resulted in transports to the hospital. It has improved collaboration across the health care continuum, and providers in the program work very closely with primary care and emergency department physicians. Zavadsky noted that these programs were made possible through the reforms in the ACA. Hospitals are now financially incentivized to use these types of programs, mainly due to the desire to reduce 30-day readmission rates and the increased focus on patient satisfaction as a part of the value-based purchasing model and patient-centered care (Hooten and Zavadsky, 2014)

Patient Care in the Home

A few participants discussed further the concept of moving care out of the hospital and into the home. It was noted that historically, medical care began in homes, and then moved to hospitals and centers where medical technology (including computers) was located. Now, technology can be almost anywhere, and most people do not receive their care in hospitals. An advantage of care in the home, Embrey said, is a greater

involvement of and support from the family with regard to compliance and follow-up. Turner said one valuable aspect of care is the time of the provider, as it may be more efficient in general for patients to come to where the doctor is located. However, there are a number of reasons why it might be better for the provider to go to the community or to the patient directly, and she added that with the models that community practitioners discussed, there is potential to reach previously underserved populations in their homes. Priest suggested payment drives where care is delivered, not what is the most efficacious route of delivery. The move toward community-based care is a result of evolving payment paradigms under the ACA.

Workshop co-chair Georges Benjamin, executive director of the American Public Health Association, alerted participants that state-based professional associations have a lot of control over what types of providers can offer what types of services. Despite demand for various types of providers, if the associations do not allow them, they will not happen. He cited the example of the position of dental therapist, which has been successful in reaching underserved populations in Alaska, but has met significant resistance in other states. Challenges like these may continue to be a barrier to workforce innovations unless buy-in happens on a broad level.

TRAINING

The ACA has a variety of health workforce training provisions that can be divided into five main sections: Health Workforce Training, Public Health Infrastructure, New Public Health Programming, Health Workforce Analysis and Planning, and Funding (APHA, 2011). One example of these is Section 5314-5315 under Title 5, where the law creates a public health sciences track at selected health educational institutions to merge public health and clinical practice and emphasize team-based service. The grants program for fellowship training in public health has also been expanded, and there are public health recruitment and retention programs, including a loan repayment program.

Turner said that while it is useful to look at the big picture broadly across the country, one must then take into account the reality at each location on the ground. With regard to physician supply, for example, big-picture planning helps to coordinate training programs and funding to educate new physicians, but there is also the opportunity to better

align supply and demand in geographic area or across specialties. In terms of defining roles, Turner said there is a spectrum of health care services that is required by an individual or a population, from advanced subspecialty care to interventions that can be performed by someone with hardly any medical training. At each step along the way, various people can perform any of those functions, with overlap across roles. There is not necessarily one right way to define roles, she said, and incentives need to be in place to measure innovation when defining new health care roles and take care that they are financially feasible. A participant suggested that there needs to be training elements and credentials for the new and expanded roles described so that, for example, different systems talking about "community paramedicine" can be sure they are talking about the same type of provider with the same skills and qualifications.

Procedural Knowledge Needs

DeSalvo raised two related concerns about the training of the physician workforce. First, physicians are generally not trained in incident command management principles or emergency preparedness. As a result, they often arrive at the site ready to volunteer, but do not know who to contact, where they fit in, or how to be the most useful. Second, physicians are becoming more and more distanced from basic skills and procedures in their everyday work (e.g., drawing blood, giving vaccinations) that may be necessary in response to an emergency. Cairns concurred and cited a study of the procedural experience of medical students entering residency programs. The study found that less than 10 percent had ever inserted a central line, and half had never started an intravenous (IV) line (Promes et al., 2009). To have a prepared workforce, it is important to ensure that medical schools are training doctors in these basic procedures, and not just first responders. As they become more distanced from these basic procedures, their ability to give help and support on the ground lags, which could limit capacity to respond in a disaster. By contrast, Cairns said the special operations medics at Fort Bragg have each inserted hundreds of central lines, and must insert about six or seven IVs and central lines during training to be considered competent. Priest agreed, but cautioned that there is currently no real evidence base for what skills are needed. Citing his own experiences, Priest noted that the military focuses on stress inoculation, preparing the medical responder to make a good decision under difficult conditions. Priest suggested that there are pedagogical ways to teach this

that do not take a lot of time, and that could be incorporated into different courses in professional schools. A key element of making hospitals safe, he said, is ensuring the providers inside those hospitals know what to do "when all hell breaks loose," and these are the circumstances for which we are probably least prepared. Embrey said that in a crisis, normal standards of care may not be possible, and there needs to be a training to prepare providers and the community for this possibility. Although such training is specified in guidelines from the Assistant Secretary for Preparedness and Response (ASPR), the Department of Homeland Security, and others, it is not consistent. While specific training may not be standardized, many communities have begun to have conversations within their health care coalitions about developing standards of care for allocation of scarce resources. The Institute of Medicine, along with ASPR, has put together several resources to support this effort that can be used by a variety of disciplines, including state and local health departments, health care coalitions, and EMS/pre-hospital care.[7] She also said the military conducts exercises in which people must make decisions with incomplete or ambiguous information. Making decisions with incomplete information when lives are at risk is a part of emergency medicine, Cairns added. Expanding health care workforce training to include some of these important pieces, at all levels of practice, can augment responding capabilities in an emergency, as well as contribute to more streamlined routine care.

[7]Reports, workshops, and other resources on Crisis Standards of Care can be found at www.iom.edu/crisisstandards.

5

Needs and Logistics of Data Sharing and Health Information Technology

Highlights of Main Points Made by Individual Speakers[1]

- The health information technology aspects of health care delivery reform can strengthen public health preparedness, response, and recovery.
- Data can enable a broader understanding of community needs that can help to improve the structure and delivery of both day-to-day and emergency care.
- Readily accessible health data can enable real-time situational awareness and response.
- "Social-health" information exchange also includes community-based service organizations and can enable providers to focus on the whole person during a disaster response, addressing acute medical needs as well as housing, shelter, and other needs that impact health.

A major theme throughout the workshop was how the collection, analysis, use, and sharing of health data is a driving force in the transformation of U.S. health care. Lurie said that the expansion of health information technology (IT) will provide better, faster, safer care. Already, electronic health records (EHRs) have contributed significantly to the continuity of care in disasters. Data from EHRs, syndromic surveillance, and other sources can facilitate modeling, predictive analytics, and real-time situational awareness that can aid effective

[1]This list is the rapporteurs' summary of the main points made by individual speakers and participants, and does not reflect any consensus among workshop participants.

planning and execution before an event, and provide decision support during an event.

UNDERSTANDING THE NEEDS OF THE POPULATION: TURNING DATA INTO INFORMATION

The *Affordable Care Act* (ACA) is a catalyst that can move the health care focus from sick care within a hospital environment to health promotion and disease prevention within the community. The challenge is securing the funding to implement this across the country, especially in underserved areas. Every locality needs to understand its population, the segments of that population, and the risks to that population in that area. Just as DeSalvo explained earlier in the report, Embrey suggested that as more people gain coverage under the ACA and participate in health systems, there will be volumes more data available that can be used to better understand the health and preparedness needs of the community, plan for those with specific health needs (e.g., children, elderly, disabled that will need specialized care), and foster individual and community resiliency.

Lessons from New Orleans

DeSalvo and Lurie shared an example from when Hurricane Isaac left New Orleans without power for 5 days in the fall of 2012. DeSalvo said there were significant concerns about residents who were dependent on electronic durable medical equipment who did not evacuate. In the absence of knowing who was where, public health officials went door to door to identify those with medical special needs. This was clearly not efficient, so they also used Medicare claims data, in a way that complies with the *Health Insurance Portability and Accountability Act* (HIPAA), to map the location of oxygen-ventilator–dependent residents in the city. Matching those addresses against some of the high-rise apartment buildings, they were able to prioritize which buildings the power company should work to restore power to first, and then to evacuate or bring back-up batteries to others. Understanding the population is also essential for managing evacuation. Lurie noted that while the convention center in New Orleans was equipped to handle evacuees arriving with durable medical equipment, the federal medical station that was set up in

Baton Rouge could not provide care to as many people as planned because the circuit breakers could not handle the load of the medical equipment.

In the summer of 2013, the Assistant Secretary for Preparedness and Response (ASPR) conducted a pilot program in collaboration with the Centers for Medicare & Medicaid Services (CMS) and the city of New Orleans to identify and map (rapidly and in a HIPAA-compliant way) all the people living in New Orleans who have electrically dependent durable medical equipment. A door-to-door exercise showed that the information harvested from CMS records correctly identified the right people and their equipment 93 percent of the time. If CMS data could be combined with data from private insurers and accountable care organizations, Lurie said, a picture of the whole population of a community and their needs could be developed.

Embrey said that understanding the current community demographics means also having a way to communicate to population segments. There are sophisticated tools that facilitate the use of cell phones to collect public health information on the ground, and to use that information for decision support in an emergency; however, there is no common framework and no resources dedicated to developing them for use in disaster response. Because of this and other reasons, communication with medically vulnerable individuals in disasters is done differently in cities across the country and could benefit from standards or coordination.

TRANSFORMING THE HEALTH INFORMATION INFRASTRUCTURE

Kevin Larsen, medical director of Meaningful Use in the Office of the National Coordinator for Health Information Technology (ONC) provided a brief introduction to the evolution of the health information infrastructure. Prior to the ACA, the *Health Information Technology for Economic and Clinical Health* (HITECH) *Act* enacted as part of the *American Recovery and Reinvestment Act of 2009* (ARRA) funded the Meaningful Use program. The program has two components, a CMS component that includes incentive payments to hospitals and doctors for implementing EHRs, and an ONC component that involves certification of EHR technology, development of industry standards to ensure interoperability, and regulation of what IT vendors produce. In many

ways, the HITECH Act was set up to support the implementation of the ACA. About 80 percent of hospitals and over half of the physician practices in the country are now using health IT and EHR. Interestingly, Larsen said, these are close to evenly distributed across urban and rural practices, and large and small practices. Health information exchange supports the ACA, ACOs, and other new payment models such as patient-centered medical homes, helping individual patients, but it also supports resilience within communities.

Larsen highlighted the impact of the expansion of health IT that occurred between Hurricane Katrina and Hurricane Sandy. During Hurricane Katrina, paper records were destroyed and many people were displaced and had no access to their health information. Many people with chronic disease could not access their current medications. By contrast, there was a robust health information exchange (HIE) in New York at the time of Hurricane Sandy, and the same infrastructure that is used every day allowed patients to have continuity of care and access to their medications during and after the storm, wherever they received care. Lurie shared a similar example from the tornadoes in Joplin, MO. All patients evacuated from the regional medical center that was destroyed were able to receive relatively seamless care wherever they were transferred to because EHRs were available, and patients being treated at outpatient substance abuse centers that were destroyed were able to receive their methadone at a clinic an hour away because remotely hosted EHRs were accessible. Larsen said that EHR is a resilient system, a routine working system that is used every day. When a disaster strikes, a whole new system or process is not needed.

In addition to provider-mediated exchange, there is also what Larsen called "consumer mediated exchange." As part of the Meaningful Use program, ONC's Blue Button Initiative[2] is a portal that allows individuals to access their own record, and to download a standardized file. Another key part of the Meaningful Use program is exchange with public health, including public health reporting and syndromic surveillance reporting.

Justin Barnes, vice president of Greenway Medical Technologies and board member of the CommonWell Health Alliance, said a lot of money has been dedicated to support the development of health IT infrastructure for data exchange, from both the ACA and ARRA, and there are many opportunities to build onto existing infrastructures. For example, $21

[2] http://www.healthit.gov/bluebutton (accessed May 10, 2014).

million was awarded through the ACA to 43 Health Center Controlled Networks to support the adoption and meaningful use of EHRs. Through ARRA, the State Health Information Exchange Cooperative Agreement Program awarded $564 million to fund state and regional health information exchanges. Other investments from the ACA that can be leveraged for health IT resilience include the ACA Prevention Public Health Fund, with over $10 billion to award for a variety of activities, including public health research and tracking, and immunization expansion; and $5 billion invested in the Patient- Centered Outcomes Research Institute (PCORI), which includes funding to establish data infrastructures to create, disseminate, and implement research evidence and practices. Barnes said there is an opportunity here to encourage PCORI to conduct research on emergency health care and IT.

STANDARDS AND INTEROPERABILITY

Many speakers and participants stressed the need for standards-based interoperability of health information systems. Barnes noted it is unlikely there will ever be one big centralized database for the country, but standards would allow access to and sharing of information across different databases. There are opportunities to leverage existing interoperability efforts, Barnes said, referring to the ONC eHealthExchange and S&I Framework as examples.[3] Beyond standards-based interoperability of health record systems, there are also opportunities for open architecture integration between EHRs and application programming interfaces that allow public and private partners to share data (e.g., to link federal or state emergency preparedness centers with local emergency departments and emergency responders). Doing this requires a minimum standard for data content and for the transport of that data. Mobile EHRs, patient portals, state and regional HIEs, and personal health records (e.g., Blue Button mentioned by Larsen) can all be combined to support public health, emergency preparedness, and both individual and community resilience. Importantly, local, state, or proprietary standards or interfaces should be discouraged, he said, as this would create more disjointed programs. In addition, he noted that the lack of a national patient identifier and the

[3]For more information see http://www.healthewayinc.org/index.php/exchange (accessed June 8, 2014) and http://www.sifframework.org (accessed June 8, 2014).

lack of comprehensive syndromic surveillance standards add to the challenges of sharing across databases.

Integrating Systems to Understand Data

Trying to integrate data across disparate clinical systems is challenging, said Roland Gamache, senior director for informatics for the National Association of County and City Health Officials. Comprehensive clinical information comes from a broad set of data sources, including communicable disease surveillance and syndromic surveillance that is required for health preparedness tasks. Population-based clinical data are captured and stored in many independent databases and information management systems, with different patient identifiers. The aggregate of information about an individual across such data sources could be used for many uses including the routine delivery of care, public health processes, clinical and comparative effectiveness research, preparedness activities, and other public health and health care-related processes. These data sources are often referred to as silos, and informatics allows us to build bridges among these silos, Gamache said.

Larsen said that moving public health reporting to an IT-embedded infrastructure has faced challenges that include the inability of state systems to receive the data, and lack of standards across departments. Barnes concurred and said that uptake requires education of state leaders to create these standards and enable care providers to share more information. The standards to achieve Meaningful Use in a comprehensive way currently do not exist. Barnes advocated for National Quality Forum-[4] (NQF-)endorsed measures for the vendor communities.

Several participants expressed concern about the lack of inclusion of community pharmacies in the integration of EHRs and access to that information in times of disaster. Most community pharmacies are not an integrated part of health systems in regions. They are part of the small business model of health care. Larsen said that the bulk of prescriptions in the United States are done through e-prescribing, which follows very tight standards. However prescription information remains very decentralized and distributed. Larsen mentioned that the large e-prescribing vendor, Surescripts, has been leveraged in disasters, and

[4]NQF is a nonprofit, nonpartisan, public service organization committed to the transformation of the healthcare system. NQF reviews, endorses, and recommends use of standardized healthcare performance measures.

Barnes cited the extensive Walgreens EHR network, but preparedness planning needs to go beyond relying on a vendor for that solution. Recalling Lurie's earlier mentioned point on involving all partners in the development of health care coalitions, keeping community pharmacies involved in planning, but not relying entirely on one vendor, may help to maximize efforts in this area.

Gamache shared an example of how applying standards and being able to use syndromic surveillance data across jurisdictions allowed for the system to distinguish emergency department visits related to a disaster event (a tornado) from other emergency department visits for other conditions (e.g., respiratory, gastrointestinal, or fever events). This is important because it allowed for monitoring for bioterrorism or other types of emergency events even while there was an emergency event already occurring. Once an outbreak has been identified, data can be used for outbreak management and mitigation efforts. Information can also be disseminated to providers in the community about who is most at risk, or how to allocate limited resources (e.g., vaccines).

Challenges of Privacy and "Change"

Larsen concluded by saying health IT implementation is really about "change management" more than it is about the technology itself. We need to identify key infrastructure and help organizations in achieving standards and upgrades for information sharing, he said. Change can be difficult as organizations all have systems they know and are used to, and they may need to compromise to be able to be interoperable. However, combining all of these evolving systems of data could augment continuity of care, both routinely and in a disaster. A challenge for interoperability is respecting and honoring the diversity of privacy and security of patients. Rules across health systems make this more complex, as each state has individual rules regarding privacy and security. However, some IT systems have eliminated part of this challenge by obtaining patient authorization for sharing information. For example, Epic Care Everywhere provides a framework for interloperability between Epic and non-Epic participating providers so that wherever the patient goes – between healthcare systems in the same town or across state and national borders - the clinicians providing care can have the information they need.[5] Protected health info-

[5] For more information on Epic, see https://www.epic.com/software-interoperability.php (accessed May 10, 2014).

rmation, including certain sensitive health information, can be shared with patient authorization and in accordance with Epic's "rules of the road" to which all participating providers agree.

In addition to the now well-known HIPAA regulations and state-level security rules, 42 CFR Part II also provides special privacy protection for some kinds of mental health care and substance-abuse addiction care.[6] Enacted in 1970, 42 CFR Part 2 prohibits disclosure that an individual is in care or has been in care unless the patient signs a consent authorizing the release of the information for a specific reason and to a specific person. The regulations effectively prohibit routine release of information to physicians, inhibit inclusion of addiction treatment information in electronic medical records, and isolate addiction treatment programs (McCarty and Hartnett 2013). While the health care system has changed very much since 1970, 42 CFR Part II has not been amended to account for changes in technology and integrated care. Even with the passage of ACA, there is concern that the privacy limitations of 42 CFR Part II could restrict the integration of addiction treatment into other medical health settings and prevent "whole patient" coordination of care (McCarty and Hartnett, 2013).

Benjamin pointed out that there seem to be very different mindsets for what people accept relative to the gadgets used in their daily life and their health. The private sector has crafted systems (e.g., cell phone applications or websites for entertainment, shopping, and travel) that know who people are, where people are, what people need, and when they need it, and can push information out in a way that they have adopted and accepted into their lives. However, having people tracked across health systems has been a challenge mainly because of privacy concerns. Related to this, the conversation about a national patient identifier, while somewhat controversial, is essential as it impacts data-driven decision making. Barnes said it was a priority for the CommonWell Health Alliance, the trade association representing health IT developers. One example where the patient identifier could improve care is preventing duplicate data in a health registry. Although not at the national level, Martin discussed use of patient tracking software at the Boston Marathon in 2013. Because several emergency medical services were involved during the race, along with several doctors along the route and in various medical tents after the finish line, their medical intelligence center uses technology to track the patients they receive,

[6]http://www.ecfr.gov/cgi-bin/text-idx?c=ecfr;sid=af45a7480ecfb95bc813ab4bbd37fb5b;rgn=div5;view=text;node=42%3A1.0.1.1.2;idno=42;cc=ecfr (accessed May 10, 2014).

which helps in providing a high level of coordinated care. While the logistics to implement this concept at a small "race level" such as the marathon seem manageable, scaling the concept to a higher city, state, or regional level may become more difficult and require additional levels of privacy and approval. Benjamin added that there is political sensitivity to tracking people, through a national patient identifier.

6

Potential Opportunities to Enhance Preparedness Through Health Information Exchanges and Predictive Analytics

Highlights of Main Points Made by Individual Speakers[1]

- Health information exchanges enable the sharing of data across disciplines, but standards would allow for optimal interoperability.
- Some exchanges are not interoperable between states, even though patients often seek care outside their home state. Unless states and regions plan ahead for the ability to access each other's health information exchanges, the exchanges will not achieve their full potential for data sharing.
- Improved surveillance and threat detection involves automated, real-time access to electronic health records to collect laboratory and syndromic surveillance data and conduct ad hoc queries (including the flexibility to query for elements that may arise in a disaster).
- Predictive analytics, artificial intelligence, and natural language processing technologies could help to better direct resources intelligently during disaster situations.
- The fluctuating and uncertain demand process for jurisdictions is experienced by every state and needs to be taken into account when planning distribution logistics.
- Nathaniel Hupert recommended that participants look to industry and to the National Oceanic and Atmospheric Administration for models that could be the base for public health information technology systems to incorporate into every day decision support

[1]This list is the rapporteurs' summary of the main points made by individual speakers and participants, and does not reflect any consensus among workshop participants.

Opportunities to enhance preparedness, response, and resilience through health information technology are numerous. With the passage of the *Affordable Care Act* (ACA) more health information exchanges (HIEs) are being created, which can help to enable sharing of data, but as mentioned in the previous chapter, barriers still exist that keep the process from being as streamlined as it could be. However, with the proliferation of health data and possibilities for sharing, there is also potential for predictive modeling and analytics that can support decision-making for authorities during public health emergencies, especially a pandemic or emergency requiring rapid medication distribution. This chapter explores some of these opportunities and the challenges that are still present as provisions from ACA begin to be implemented.

HEALTH INFORMATION EXCHANGES

As noted above, one approach to integrating health information across disparate systems is the development of HIEs. The speakers from Kansas and New York described examples from their states and their applications to public health preparedness.

Kansas Health Information Network (KHIN)

KHIN was described as an example of a multi-functional health information exchange by Michelle McGuire, senior project manager at KHIN. This provider-led HIE is a public–private partnership in association with the Kansas Department of Health and Environment. KHIN is currently working to be able to connect to other state HIEs.

Participants in the health information exchange across the state include hospitals, clinics, and federally qualified health centers, as well as physician practices, dental clinics, optometrists, substance abuse centers, community mental health centers, home health organizations, safety net clinics, pharmacies, hospices, long-term care facilities, laboratories, behavioral health providers, public health departments, and schools. Currently there are 367 KHIN members that are, or will soon be, sending data for over 1 million unique patients to the exchange. KHIN is also transmitting data to the public health department for syndromic surveillance (Figure 6-1). Thus far more than 900,000 records have been sent, as well as data on over 20,000 immunizations.

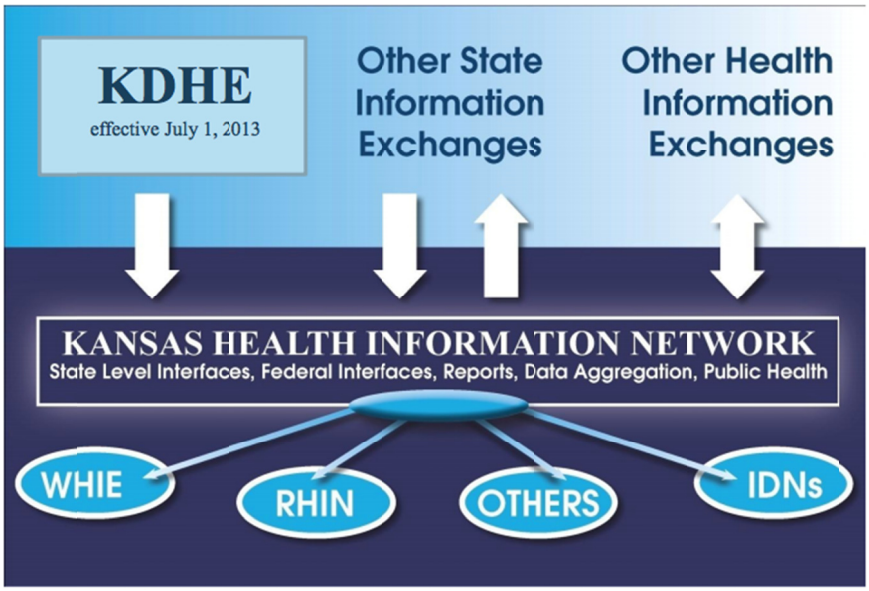

FIGURE 6-1 Description of the two way communication involved in the Kansas Health Information Network. KDHE = Kansas Department of Health and Environment, WHIE = Wisconsin Health Information Exchange, RHIN = Rural Health Information Network, IDNs = Integrated Delivery Networks
SOURCE: McGuire Presentation, November 19, 2013

McGuire described several of the services KHIN has available, for example, secure clinical messaging for communication and information exchange among providers, health information exchanges, and electronic health record vendors. The main use of KHIN is the Provider Portal, which allows providers to query for a patient's records from any of the other participating hospitals or clinical entities. In this regard, the HIE can improve patient protection, helping in the continuity of care from one health care facility to another by providing a single location for all patient records. There are state-level interfaces with the cancer registry and with a new infectious disease registry, as well as reporting for immunizations, syndromic surveillance, and reportable diseases. KHIN also has functionality for data extraction from multiple sources. KHIN is now offering a personal health record, fostering patient engagement by allowing patients to access their own health information and share information with providers. This would be extremely helpful in disasters

to help providers, possibly out of state, to treat the "whole person."

A health information exchange is not traditionally considered a disaster planning tool, but could be of great help in public preparedness, McGuire said. For treatment of patients, a health information exchange can provide access to health records (including immunizations, medication, recent laboratory result, diagnoses, allergies, provider names, and contact information) no matter where the patient is transported for care. Health information exchanges can also be used to locate patients during the disaster (as was done following the Boston Marathon bombings). As soon as a patient is registered in a hospital system, there would be a record in the health information exchange, associated with current records. Offsite or out-of-state/region data storage is also advantageous for disaster recovery. Data captured during a disaster can also inform the response. For example, information entered into the Infectious Disease Registry can provide the ability to contact the infected patient sooner, and reduce disease investigation time.

Current Barriers

There are several barriers to effective HIE data capture, McGuire noted. The different EHR vendors have variations and limitations in their capabilities. In addition, the Centers for Disease Control and Prevention (CDC) does not require the use of any particular vendor, so for example, Kansas City spans the Kansas-Missouri border, and each state uses a different vendor for sending syndromic surveillance information to CDC. Interfaces are costly and time-consuming, and hospitals in Kansas, for example, currently need to pay for and institute both HL7[2] interfaces to send data to public health, and Continuity of Care Document interfaces for Meaningful Use compliance. Often, health information exchanges do not cross state lines, yet patients are transported across state lines for care both routinely and in disasters. Of course, not all hospitals or facilities are participants yet. Unless states and regions plan ahead for the ability to access each other's health information exchanges, the HIEs will not achieve their full potential for data sharing, McGuire said. She also encouraged participants to include health information exchanges in disaster planning. In closing, she referred participants to the HIMSS Dashboard, a website tracking the different HIEs across the country,[3]

[2] Health Level Seven International (HL7) is a non-profit organization that develops standards for integrating, sharing, and retrieving electronic health information.

[3] Available at http://apps.himss.org/StateDashboard/ (accessed June 8, 2014)

adding that some larger states have multiple health information exchanges.

Surveillance and Threat Detection: The State Health Information Network New York (SHIN-NY)

Gus Birkhead, deputy commissioner and director of Public Health Programs at the New York State Department of Health, provided a state health department perspective on surveillance and threat identification. State health departments have a statutory mandate to collect surveillance data, including vital records data and other health data. In New York, the state health department is the health system regulator, operates the state Medicaid program and the state health exchange, is the shared lead agency in health emergencies, and is a source of expert medical guidance to the health care community. The state department of health is at the crux of all the issues that relate to surveillance, threat detection, and response communication.

Electronic Surveillance

Birkhead described New York's current electronic surveillance capabilities across a variety of venues, including clinical laboratory reporting, discharge data, vital records, poison control calls, EMS, Medicaid pharmacy claims, influenza-like illness (ILI) sentinel surveillance system, and others. Much of the communicable disease, cancer, and chronic disease surveillance systems have been built on the electronic clinical laboratory reporting system.

Using influenza as an example, Birkhead described how all of the different surveillance systems that are used on a regular basis can come into play for threat identification and response. This is another area highlighting the advantages for preparedness to be built into everyday care to be successful. For example, the Health Care Emergency Response Data System (HERD) provides laboratory reports on positive influenza samples at clinical laboratories by type of flu (A, B, or unspecified) and can compare the data with previous flu seasons. The ILI sentinel surveillance system is an ad hoc system of about 100 physician practices around the state who report weekly to the state department of health on the percentage of their patients with influenza-like illness. Another ad hoc data collection mechanism is ILI in emergency department reports. In addition, hospitals enter data each week on their positive flu

hospitalizations. These ad hoc systems are labor intensive and slow, and Birkhead noted that this type of surveillance would have much greater potential if the state could tap directly into electronic health records (EHRs) and pull information on flu-like illness visits. In theory, this could allow development of a statewide picture on a daily basis, he said, but flu is just one example of such monitoring. Following Hurricane Sandy, for example, the state was able to monitor respiratory illness, gastrointestinal illness, carbon monoxide poisoning, and other issues that are prevalent after many kinds of disasters to help guide citizens through recovery.

Birkhead described SHIN-NY as a platform on which various applications and tools can be built (e.g., physician alerts, patient engagement, care plan management) to enable bidirectional flow of information. For example, for vaccinations given in a pharmacy (i.e., not at the patient's medical home), the immunization registry can push data out to EHRs. There is also functionality for public health to query any of the participating systems through a Universal Public Health Node.

Future Directions

Going forward, the intent is to develop a unified, statewide, standards-based health information network that taps directly into EHRs and other data sources to provide access to data whenever needed, without putting a burden on the reporting sources. To this end, New York State is the public partner in a public–private partnership that is developing SHIN-NY with a private partner, the New York E-Health Collaborative. The network includes 12 regional health information organizations that provide geographic coverage for the state, each using a core set of data standards to collect and share health data from participants (e.g., hospitals, providers, laboratories, pharmacies, long-term care, health plans, public health officials, patients). The goal is to improve quality of care, efficiency, and patient satisfaction using information technology tools to enable collaboration among patients, providers, public health, and payers, while safeguarding privacy, confidentiality, and data security. No single entity can deliver on this goal alone, Birkhead said. He noted that New York was able to use available state and federal *Health Information Technology for Economic and Clinical Health* (HITECH) funding for the development of SHIN-NY. Going forward, Birkhead said that Medicaid Meaningful Use Matching Funds could cover about one quarter of the statewide network

costs, with the balance from state *Health Care Reform Act* funds.

Improved surveillance and threat detection involves automated, real-time access to EHRs to collect laboratory and syndromic surveillance data and conduct ad hoc queries (including the flexibility to query for elements that may arise in a disaster). Monitoring outcomes for diseases of public health interest includes developing an all-payer database, Birkhead said, adding that just leveraging publicly-run health insurance programs (Medicaid, the exchange, state and local employees insurance plans run by the state) would include just over half of the population in the state. If timely, this could be a threat detection device, but more likely it will be used to establish the baseline in terms of services during an event. There needs to be bi-directional information exchange, and real-time guidance and decision support for conditions of public health interest, he concluded.

PREDICTIVE ANALYTICS IN PUBLIC HEALTH PREPAREDNESS

The ACA provides a very important opportunity to improve the uptake of EHRs and the ability to use the data in them; to improve surveillance methods and use these data for improved models, analysis, and decision making; and to improve service delivery through public and private partnerships, said Brandon Dean, staff analyst for the Los Angeles County Department of Public Health.

Public health interventions are focused upstream, he continued. Effective planning and execution before an event can lead to a delay in peak impact, decreased burden on hospitals and infrastructure, and diminished overall health impacts. Public health has a complex relationship with health care, he said, and it is important that we continue to think of this as a "systems of systems," and understand how they integrate.

Modeling Dispensing and Surge Capacity for Emergency Planning in Los Angeles County

Models and analytic projects can help manage the complexities of integrating health care and public health, Dean said, and he offered several examples from his work in Los Angeles. There are about 11 million citizens throughout 88 cities in Los Angeles (LA) County, which

Dean noted means there are 88 mayors with whom county public health has to coordinate. LA County has a very robust surveillance system that includes 14 separate data systems that feed into the main system.[4] As of 2009, about 17 percent of the population of LA county was uninsured[5] (prior to the ACA), about 54,000 individuals are homeless,[6] and 36 percent of county residents are foreign born.

Pandemic Modeling

Dean described two models that were explicitly designed for local health departments to understand the spread of pandemic influenza within the community and the effect on the hospital systems (see Figure 6-2), and to use that information to drive local planning and policy development. A community mitigation model was developed in collaboration with the Longini modeling group and the National Institutes of Health-funded Models of Infectious Disease Agent Study (MIDAS), and a surge model that used the output of the community mitigation model was developed in collaboration with Hospital Association for Southern California.

During the 2009 H1N1 pandemic, the community mitigation model was used to predict the effects of vaccine coverage on community attack rate. The model suggested that if nothing was done, the average attack rate would be 36 percent of any population, translating to about 3.5 million people in LA County. If 30 percent of the population could be vaccinated, 18.7 percent would be affected, and if 50 percent of the population could be vaccinated, it would drop to only 0.8 percent affected. As a result of the modeling, the health department set the target of administering between 3 and 5 million courses of vaccine as quickly as possible. The fall 2009 vaccination campaign, carried out by 110 points of distribution (PODs) over a 6-week period, was able to administer 280,000 courses of vaccine. Of the 28,000 physicians in LA County, about 6,000 (mostly pediatricians and obstetrician/gynecologists) gave the vaccine to their patients.

[4]The feeds are primarily banded into eight categories, and include: Emergency Department Visits, Nurse Call data, Poison Control, Over the counter medication sales, ReddiNet (two- way hospital reporting system), Veterinary, 911 Calls and Coroner.

[5]http://www.chcf.org/~/media/MEDIA%20LIBRARY%20Files/PDF/A/PDF%20AlmanacRegMktQRGSixCombined13.pdf (accessed May 20, 2014).

[6]http://documents.lahsa.org/planning/homelesscount/2013/HC13-Results-by-SPA-and-SD-Nov2013.pdf (accessed May 20, 2014).

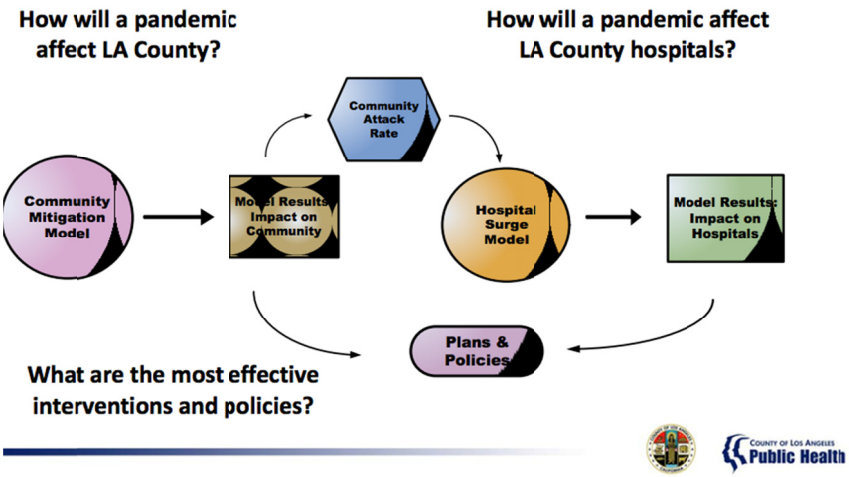

FIGURE 6-2: Integration of Models to inform plans and policies in Los Angeles County
SOURCE: Dean presentation, November 19, 2013.

In assessing the campaign, Dean said there was no metric or a mechanism to determine how much vaccine was administered by providers. A research corporation was hired to conduct sampling for 10 weeks, and it was determined that about 3,335,000 courses of vaccine were given, just reaching the low end of the target.

The surge model was first developed in 2003 to predict the effect of an anticipated closing of several government-run hospitals on the hospital system. The model was modified in 2008 to look at the effect of an influenza pandemic on the hospital system as a whole. Using unmet need (i.e., beds) as the primary output, the results stressed the need for upstream public health intervention to alleviate the burden on the hospital system. It was also clear there would be unequal impacts in different regions, based on the size of the hospital, local population, and other factors.

Anthrax Modeling

Another example described by Dean involved medical counter-measures for anthrax exposure. Current plans require the dispensing of prophylactic medication to 10 million people within 48 hours. There are numerous PODs, he said, but more capacity is needed. Modeling was

used to study the effect of additional dispensing partners, both public and private. Initial results suggested that not distributing any intervention could lead to 400,000 cases of anthrax. With LA County's current capacity, the number of cases could be reduced to about 142,000 by dispensing within 48 hours post exposure. If dispensing capacity could be extended, through additional POD sites or engaging partners such as pharmacies, the number of cases could be reduced to 124,000. Better planning and allocation of resources in a more systematic way could cut the number of cases further.

Prescription Drug Use

The last example shared by Dean is a pilot program to track prescription drug use by the most vulnerable residents (by both demographics and geography) prior to a catastrophic event. By 2014, about 1 million uninsured residents are expected to have acquired insurance under the ACA, the majority of them through the L.A. Care Health Plan. Using de-identified data from health records and insurance records, the goal of the tracking program is to build profiles of what these particular groups will need in an emergency, and work with the public and private providers to coordinate pharmaceutical care services for these individuals during a crisis to prevent the ad-hoc provision of medications that often occurs at the local level currently at various emergency shelters. Ideally, this could help to inform real situations that Dean described in his simulations. This is useful information to inform cities' planning, but not every city has these technologic capabilities. As ACA progresses, and more health care systems increase EHR use and Meaningful Use requirements (enabled through *American Reinvestment and Recovery Act*), it may be easier and ideally more routine to have better predictive modeling at the local level that can target a range of needs.

Modeling and Planning for Pandemic Dispensing: Integrating Real-Time Information for Decision Support

Nathaniel Hupert, associate professor of public health and medicine at Weill Cornell Medical College, shared a photograph of New Yorkers standing in long lines for small-pox vaccinations in 1947 and noted that people still stand in long lines during vaccination exercises in stadiums and other large venues. Continuing at this rate, it will take an extremely

long time to get countermeasures to all 8 million residents of New York City, he said, and the city set out to model alternate ways of reaching the community.

One of the approaches that has been modeled and exercised, and was used in 2009 and 2010 during the H1N1 influenza pandemic, is involving retail pharmacies in public health dispensing. He cited a study of the distribution of antiviral drugs in California in 2009. The studyfound that key challenges for local health departments were access to information on private retail supply, confusion regarding the use of public versus private sources of antivirals, and tracking of antiviral use (Hunter et al., 2012). The key difference between an optimal system for a given set of conditions, and a resilient system that can respond to many different conditions, he said, is creating systems that are designed for sharing information.

Hupert and colleagues built a system to model pandemic influenza outbreaks using the 62,000 retail pharmacies across the country to measure potential capacities. Hupert noted the challenges of modeling such scenarios, and the many assumptions that must be incorporated (e.g., size and type of pharmacies, customer volume at a given pharmacy, volume of prescriptions a pharmacist could fill). The model suggested that hypothetically, there is adequate pharmacy capacity to provide antiviral prescriptions to people as the flu hits its theoretical peak in a given county. However, a logistics model of the weekly requests for antiviral drugs from the strategic national stockpile (SNS), and the daily delivery of new antivirals to all 62,000 pharmacies, predicted that the SNS would run out of pediatric antivirals. In addition, even though there were theoretically enough adult antiviral doses in the SNS in the hypothetical example, there was still unmet demand at the local level (example.g., people arriving at the pharmacy after the last dose had been given and the next shipment had not yet arrived). With many critical products including pharmaceuticals, medical equipment, and supplies manufactured overseas and delivered to hospitals, businesses, and homes “just in-time” there is the potential for limited or no surge production and delivery capacity. A glitch in supply, production, or transportation thus could become a supply problem at the pharmacies themselves.

This model shows, Hupert concluded, that adequate supply is not a guarantee of a high system fill rate, or ability for level of inventory to meet demand. The fluctuating and uncertain demand process is experienced by every state. Careful design of inventory allocation rules

is essential to ensure that fill rates are as high as possible, and effective mass prophylaxis requires that inventories are available at the right place at the right time. Citing the work of John A. Muckstadt on information systems for supply chain management for large corporations, Hupert offered an approach to improved response involving information systems, decision support, and response strategies. Planned response strategies can be accomplished with real-time information that involves collaborative decision support, for example, between the federal government and retail (Figure 6-3).

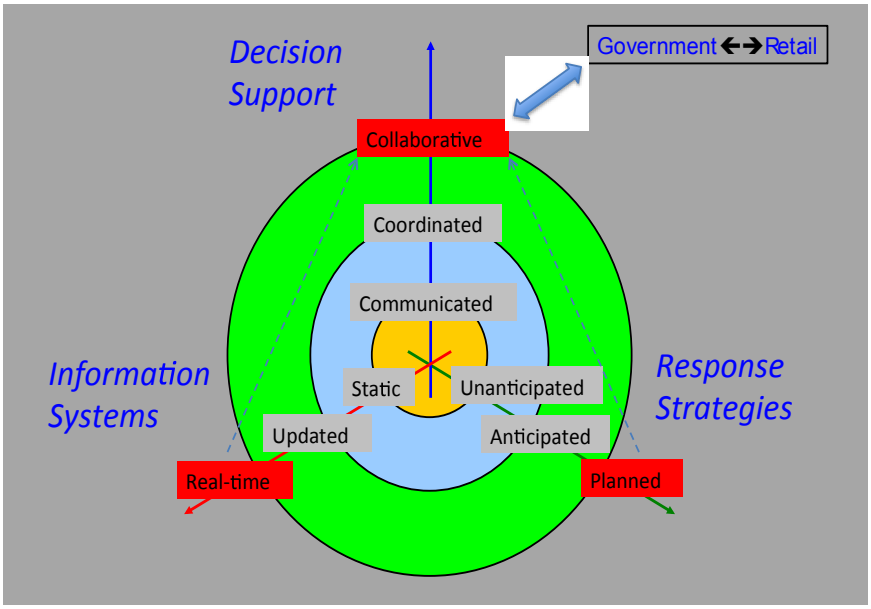

FIGURE 6-3 Approach to improved response combining real time information systems and planned response strategies for collaborative decision support between the government and private sector.
SOURCE: Hupert presentation, November 19, 2013.

Public- and Private- Sector Integration

Hupert noted that he had not found provisions in the ACA addressing the integration of private health care sector information systems into public health response, and this will need to be considered if they are going to maximize the capability at the local level of providing

countermeasures in an emergency scenario, as previously described. He also observed that, with regard to public health emergencies and the ACA, there is a divide between emergency care and health IT. For example, two sections of the ACA, Section 1104 on Administrative Simplification: Operating Rules (regarding *Health Insurance Portability and Accountability Act* [HIPAA] transactions) and Section 3504 on Regionalized Systems for Emergency Care (regarding trauma systems) do not coordinate at all. We must have information systems with HIPAA-protected information about patients at the pharmacy that is available to emergency care, he said. Hupert recommended that participants look to industry and to the National Oceanic and Atmospheric Administration (NOAA) for models that could be the base for public health information technology systems. NOAA, for example, has a distributive system of data sensors with layers of analytic and security wrapping that could be used in this case to support data sharing and coordination, but also meet HIPAA requirements. As the ACA is being implemented, it is an opportune time to bring together the people who run the various health information systems and make sure that public health is part of the system, he concluded.

Incorporating Modeling Into Everyday Health Decision Support

Many participants also discussed how health care and public health decision makers, with numerous competing priorities for their time and resources, could use existing health information exchanges for decision support without the need to build or rebuild models for each new situation. Hupert recommended that health care look to other sectors in which modeling has achieved successful results, such as manufacturing systems or software development. How does the model work under ideal circumstances and what are the tactical models for how to redirect when things go wrong? One view of how modeling should integrate into public health is that users should not need to think about the model itself. Hupert added that the modelers need to address the "right questions" to derive useful information that can be passed on to the decision makers (i.e., without the model itself being forefront for the decision maker).

Cairns pointed out how people are very comfortable with the models used by the National Weather Service. That modeling system has been incorporated into daily life, with dissemination tools (e.g., cell phone apps for weather) reaching across the world. A question is how can

public health provide something that has functional reality and importance to people in their daily lives. Hubert said the National Weather Service is able to do this because hundreds of millions of dollars have been invested over the past 50 years, to the point where it is part of people's daily lives. People are not concerned with the technology behind the tornado warning, but they know what action to take when there is a warning. A challenge for public health preparedness is that modelers are dealing with such potentially rare events that would not impact people's daily lives like weather does. Cairns countered that North Carolina is tracking emergency health records across entire populations, collecting data on health care encounters every day. Essential to the National Weather Service modeling is timely data and good distribution of sampling. As more people become covered and interact with the health care system and data points are entered into health information systems in real-time, the question is how to take that comprehensive sampling and turn it into information of value in a timely manner.

Cairns added that many of the predictive analytics used in the detection of emerging health threats (e.g., North Carolina Bio-Preparedness Collaborative, see Chapter 8) were not developed for health care, but for intelligence, fraud detection, financial services, and other venues. He suggested that trying to match patients with health resources (e.g., available vaccine) is similar to just-in-time supply chain management principles. We need to think differently about what we are doing and embrace technologies and tools, he said.

7

Leveraging the *Affordable Care Act* and Information Technology to Innovate

Highlights of Main Points Made by Individual Speakers[1]

- "Social-health" information exchange also includes community-based service organizations and can enable providers to focus on the whole person during a disaster response, addressing acute medical needs as well as housing, shelter, and other needs that impact health.
- Many hospitals are looking for help with how to meet the *Affordable Care Act* community benefit requirement, and engaging the community in a health information exchange could be one approach.
- Communication technologies such as telemedicine enable the sharing of information and expertise remotely, in real-time, extending workforce capacity and increasing quality of care.
- Specialists can help manage patients at local hospitals through telemedicine. This could be an important asset when hospitals are surged and could benefit from additional workforce from unaffected areas.
- Education is only a small part of getting people to embrace health information technology. A major component is making it very user friendly so that it is easy to learn and use.

Technologies such as telehealth and health information exchanges (HIEs) are enabling the mobilization of health information across systems and geographies and are building opportunities to broaden the reach of specialist practitioners as well as allowing public health and clinical care to connect and care for the patient at a more holistic and fundamental level. Again, as more health systems shift towards

[1]This list is the rapporteurs' summary of the main points made by individual speakers and participants, and does not reflect any consensus among workshop participants.

technology use and integrated care with the *Affordable Care Act* (ACA) at the national level, more opportunities arise for innovations at the patient care level to build connections and expand partnerships that can come into play during disasters. This chapter explores some of these opportunities that are beginning to grow.

PCCI: LAYERING TECHNOLOGIES FOR INFORMATION EXCHANGE, ANALYTICS, AND CONTINUITY OF CARE

Connie Chan, project director at PCCI, a nonprofit organization specializing in the development of real-time predictive and surveillance analytics for health care, described three parallel tracks of technology that PCCI is developing to make health care "safer, simpler, and less stressful." In the context of ACA, their program fits within the "triple aim" of health care, striving for higher quality care, lower cost, and better population health. In addition, PCCI's model can add the unspoken fourth aim of making the country more resilient in disasters by connecting social and clinical services.

The first technology is the Dallas Information Exchange Portal (IEP), which is the underlying infrastructure for several other PCCI technologies. Chan noted that there are approximately 10 large health systems and 134 hospitals in Dallas. About 23 percent of the Dallas population lives below the federal poverty line. About 20,000 individuals were relocated to Dallas/Fort Worth after Hurricane Katrina and many of them remain there today.

Social Health

The Dallas IEP is a "social-health" information exchange. The concept is very similar to a health information exchange, Chan explained, but reaches a broader provider community. The vision is to include over 400 community-based service organizations (e.g., those that provide shelter, housing assistance, food and nutrition assistance, transportation assistance, and financial assistance), as well as health care organizations via the regional HIE, the mental health and behavioral health community, and the Dallas County Detention Facility. In the context of disaster preparedness, responders could also be included within the Dallas IEP.

The initiative was developed out of the Parkland Health and Hospital System which is a safety net hospital (more than 30 percent of the care provided is for patients without insurance). It became very apparent, Chan said, that the patients regularly coming to Parkland were also regular users of the Salvation Army, Catholic Charities, Visiting Nurse Association, and other community organizations, and that there was a serious lack of coordination of care for these patients moving across these different sectors. A flexible, standards-based social-health information exchange would enable care providers to share information about medications, appointments, housing and transportation needs, and other needs that are critical for patients to achieve positive health outcomes. This will not only help in everyday care and reduce readmission rates, but can help focus on the "whole person" during recovery.

Identifying High-Risk Patients

The second technology is predictive analytics software called Pieces™ that accesses the electronic health record (EHR) system and uses clinical and social risk factors to identify patients that are at high risk for an adverse event (e.g., congestive heart failure). Similar to Dean's and Hupert's earlier comments on predictive modeling to alert health departments to adverse events, this system can then alert the care providers, allowing them to mobilize interventions to prevent the adverse event from happening. Pieces is currently in place at Parkland and has been used in clinical and operational decisions for over 100,000 patients across Dallas/Fort Worth. Chan said there has been a relative reduction in readmission of 30 percent across all patients, and 20 percent relative reduction among Medicare patients.

Getting Patients Involved

The third technology PCCI is developing is the Intelligent Continuity of Care Document (iCCD), a multiuser interface for the Dallas IEP. Through technology such as natural language processing, artificial intelligence, and machine learning, the iCCD condenses patient information from multiple sources to provide a summary of the information most relevant to the point of care. The iCCD is also being developed for mobile interfaces so that providers and patients can interact with the information on tablets or smartphones, enabling services

to be delivered directly in the community. These are great examples of coordinated, streamlined care with an emphasis on technology that *American Reinvestment and Recovery Act* and ACA are encouraging through Meaningful Use Requirements and the Patient Centered Medical Home model (POCP 2012).

Chan noted that PCCI is cognizant of the privacy and security concerns associated with cross-sector information exchange, and a detailed assessment of federal and state regulations has concluded that this is a feasible and permissible approach to information exchange with the right provisions and agreements.

Applications to Disaster Preparedness

These three layers of technologies are being developed for daily clinical and social workflows, but there are clearly opportunities for application to disaster preparedness. As an example, Chan described how the Dallas IEP could be of value in a tornado throughout all phases (see Box 7-1).

BOX 7-1
Potential Applications of the Dallas Information Exchange Portal in a Tornado Disaster

Before

- Build collaborative relationships to strengthen community resilience.
- Build redundancy into technology systems.
- Collect baseline data on community health.
- Require clinical and social providers to document needs in case of disaster.
- Provide data to inform disaster resource planning.

During

- Identify individuals or populations at highest risk to target and deliver scarce resources.
- Assist on-the-ground workforce and resource management, coordination, and communication.
- Use real-time surveillance of emergent health issues and community trends.
- Mitigate impact if there is any loss of public health infrastructure.
- Employ mobile tools to enable response efforts in the field.
- Document needs with first responders or response coordinators.

- Marshall the primary care network to support hospitals and theRed Cross.
- Prevent exacerbation of disaster effects.

After

- Communicate back to primary care providers after disaster.
- Help relocated individuals to thrive in new settings.
- Enhance community recovery efforts, particularly for vulnerable populations.
- Provide data to improve disaster response planning for future disaster events.
- Use long-term surveillance of populations affected by disasters.

SOURCE: Chan presentation, November 19, 2013.

Chan highlighted three areas of focus of the Dallas IEP that support the ACA: chronic disease management; population health surveillance and health disparities research; and optimizing transitions of care. The Dallas IEP also supports the ACA relative to public health preparedness in the areas of community resilience, surveillance, and managing scarce resources in the community.

In developing information exchange portals and predictive analytics and technologies, Chan said that technologies being developed for non-catastrophic events could be very useful in disaster situations. It is important to harness the strength of smaller players, the community-based organizations that are not traditionally part of the health sector, to build a layer of redundancy during and after disasters. By having a social-health information exchange, providers will be able to focus on the whole person during the disaster response, acute medical needs as well as housing, shelter, and other needs. This would complement the patient centered medical home model that ACA encourages, and help to focus on value, decrease readmission rates, and increase patient satisfaction. Finally, predictive analytics, artificial intelligence, and natural language processing technologies could help to better direct resources intelligently during disaster situations.

During the discussion, various participants expanded on the idea of community-based organizations as part of the health information exchange, in particular, what they would need to participate (e.g., finances and technology). Chan said that PCCI has designed integration solutions and technology options for high-, medium-, and low-tech

organizations, noting that most of the organizations fall into low- to medium-tech level. In terms of finances, sustainability is a challenge for HIEs in general. The current PCCI approach is grant funded, and the pilot program is completely cost-neutral to community organizations. The intent is to be able to measure and demonstrate the economic impact or potential cost-savings, Chan explained, and then potentially move into a shared-savings model[2] or a gain-sharing model in the community. PCCI is also exploring alternate means of funding information exchange, such as licensing, as the technology for social HIEs can be applied to other applications. Another opportunity for funding such efforts mentioned earlier by Larsen could be the State Innovation Models Initiative through the Centers for Medicare & Medicaid Services[3] that seeks to pilot new and innovative mixtures of payment and service delivery models.

Larsen pointed out that many hospitals are looking for help with how to meet the ACA community benefit requirement, and perhaps engaging the community in a health information exchange could be one approach.

INTEGRATING TELEMEDICINE INTO DISASTER PLANS

Regionalization of care improves efficiency and quality, but can create disparities in access for those who do not live near regional centers. Telemedicine, and similar conferencing technologies allow clinical expertise to be everywhere, said James Marcin, director of the pediatric telemedicine program at the University of California (UC), Davis. Telemedicine has a myriad of clinical applications and has been used in various scenarios already for several years, especially in rural areas (IOM, 2011). The most common uses are for outpatient specialty consultations, inpatient intensive care specialty consultations, operative and procedural consultations, interpretation of images, and remote patient monitoring. While the concept of telemedicine is not entirely new, provisions in the ACA, many of which are tied to the Center for

[2]When health care facilities spend less on care, they can be rewarded with a portion of the savings from the payer, so both entities share in the savings. This is often promoted through participation in Accountable Care Organizations. For more information see http://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/sharedsavingsprogram/index.html?redirect=/ (accessed May 2, 2014).

[3]http://innovation.cms.gov/initiatives/state-innovations/ (accessed May 2, 2014).

Medicare & Medicaid Innovation, contain several advances for telemedicine. The legislation also encourages new opportunities in home health services and remote monitoring (ATA 2010). Marcin gave an example of some of these potential opportunities through his experience at UC Davis.

The UC Davis telemedicine network interacts with more than 100 sites across the state every year, Marcin noted, resulting in more than 40,000 live interactive adult consultations, and 6,000 pediatric consultations since its inception in 1996. Marcin shared the case of a comatose child who, because of his immediate needs, was transported to a local level II trauma center instead of the pediatric trauma center 150 miles away. Through a videoconference with the adult critical care physician, Marcin was able to help manage the care of the child in the adult intensive care unit. This remote patient management avoided the need to transfer the child and displace the family.

Surveys of parents have shown that they are overwhelmingly more satisfied with the care they receive via telemedicine versus the standard of care, which is telephone consultation (Dharmar et al., 2013a). Similarly, physicians rated the quality of care higher when the consultation was via telemedicine versus telephone. Medication errors were also reduced when telemedicine was used (Dharmar et al., 2013b). Telemedicine also offers significant cost savings. There is a 31 percent lower transfer rate among ill children receiving telemedicine compared to telephone consults. Assuming 10 seriously ill children per year, receiving care via telemedicine results in a cost savings of $38,366 per year, Marcin said. Another way to look at it, he said, is that for every dollar that UC Davis has invested in the telemedicine program, society (or typically the payer) has saved $12.

Telemedicine is used every day in the UC Davis emergency department, and it has now been integrated into the existing disaster preparedness framework at every step of the process (see Figure 7-1). Marcin said there are videoconferencing units in the ambulances, and satellite videoconferencing units that fit into a suitcase and can be dropped at a scene. In the pre-hospital setting, telemedicine can lead to improved triage decisions, improved transport decisions, access to rural sites, and decreased exposure of providers to toxins or infectious agents. From a workforce perspective, telemedicine offers the potential to increase capacity by extending expertise beyond regional centers.

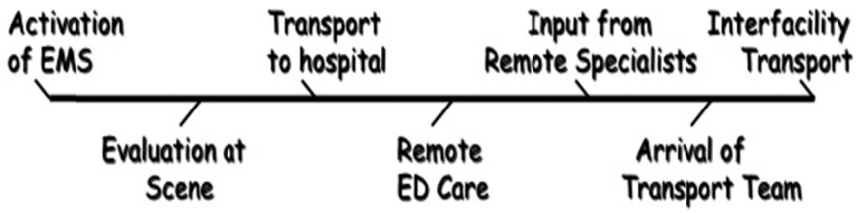

FIGURE 7-1 Integration of telemedicine in disaster preparedness.
SOURCE: Marcin presentation, November 19, 2013.

Specialists can help manage patients at local hospitals. This could be an important asset when hospitals are surged and could benefit from additional workforce from unaffected areas.

Despite the success of telemedicine, there are barriers to implementation. Medicare has very restrictive reimbursement policies, and only about half of states reimburse for telemedicine for Medicaid populations, Marcin explained. There are also issues with cross state licensure because the consulting specialist could be in a different state, and might not be licensed in the state where the patient is. A related issue is hospital credentialing and privileging of the specialists at the remote hospitals before they are able to act as a consultant via videoconferencing. There is also concern about increased liability. While some of these barriers will remain at the local level, ACA legislation's relevant telehealth provisions, and the *Health Information Technology for Economic and Clinical Health* (HITECH) *Act* through ARRA have an opportunity to assist in moving this forward and augmenting every day care and disaster response.

INCORPORATING HEALTH INFORMATION TECHNOLOGY INTO EVERYDAY USE

Many participants discussed the importance of educating and engaging health professionals in the use of health information technology (IT). Barnes said that with regard to the uptake of EHR, about half of providers are adopting this technology simply to receive the incentive funds, and the other half understand what the technology can enable. Larsen said that getting people to understand why they are implementing EHR is very important. Education is only a small part of getting people to embrace health IT. A major component is making it very user friendly

so that it is easy to learn and use. The challenge for technology developers is to try and minimize the amount of education needed to use the system. During his remarks, Gamache added that conducting exercises like they do in the military would not be sustainable in the community. What is needed for this effort to succeed are systems that are used every day that can continue to be used in a disaster. What is done with the information may change in a disaster, he said, but how the information is reported or retrieved should stay as similar as possible to routine use. Terry Adirim, special consultant on maternal and child health at the Human Resources Services Administration (HRSA), noted that Meaningful Use,[4] the financial incentives created to support optimal use of EHRs, requires that there be functionality in EHRs for public health. However, it was suggested that only about 10 percent of physicians and 15 percent of hospitals are using their EHRs for public health purposes. As Dawkins noted, ACA brings a lot of great opportunities to share data. If this is the case, there is opportunity for public health to capitalize on ACA and include themselves in the conversations to not only meet their own objectives of data sharing and providing needed services to the population in disasters, but also to help hospitals meet the community benefit requirement spelled out in the legislation regarding 501(c)3 status (referenced on p. 15). As more health care facilities switch to electronic data records, more information will be available to inform models and support decision-making, whether at the local, state, or hospital catchment level

[4]The Medicare and Medicaid EHR Incentive Programs provide financial incentives for the "meaningful use" of certified EHR technology to improve patient care. http://www.cms.gov/Regulations-and-Guidance/Legislation/EHRIncentivePrograms/Meaningful_Use.html (accessed June 9, 2014).

8

The Continuing Role for Public Health Preparedness and Response

Highlights of Main Points Made by Individual Speakers[1]

- The *Affordable Care Act* (ACA) provides opportunities and incentives for health systems to prepare, but it cannot ensure that entire communities are prepared, and there is still a strong role for medical and public health preparedness programs.
- Public-private partnerships are becoming increasingly important to achieving preparedness goals. Collaborations could, for example, enhance public health capacity in threat assessment, immunization tracking, and medical countermeasures dispensing.
- The ACA focus on community-based care provides an opportunity to build more resilient communities.
- Building community resilience also involves addressing social determinants of health.
- To be a truly prepared nation, preparedness must not be a separate activity but rather, an integral element of routine everyday care that can surge when needed.

The *Affordable Care Act* (ACA) provides better incentives and opportunities for health systems to prepare, but it will not prepare an entire community and its facilities to deal with a disaster, Lurie stressed. Providers may still struggle with competing priorities and the allocation of scarce resources and decreased funding. However, she continued, the ACA alone will not negate the need for the National Hospital Preparedness Program, or replace the need for health care facilities to

[1]This list is the rapporteurs' summary of the main points made by individual speakers and participants, and does not reflect any consensus among workshop participants.

prepare and train for public health emergencies. It will not create programs to bring partners together to drill and exercise. Changes to coverage will increase access to care and foster better individual and community health, but there is still a need for individuals and their families to prepare for how a public health emergency or disaster could impact them, not only on paper, but also in practice.

INSURANCE: NOT A REPLACEMENT FOR PUBLIC HEALTH

Even though the number of uninsured is projected to decline by about half, about 30 million people will remain uninsured. Ebeler reminded participants this number includes those in states that do not expand Medicare and who will fall into the coverage gap, those who are undocumented (and cannot get coverage), and those who could get coverage but opt not to enroll. Regular and disaster care will still need to be provided for the uninsured and underinsured.

Martin of the Boston Public Health Commission pointed out that health insurance plans vary, and coverage does not equal access to needed care or a reduction in need for public health services. In Massachusetts, where more than 97 percent of the population is insured, Martin noted that 18 percent of those insured have had difficulty finding a provider who will see them. In addition, while much attention is paid to physical medical needs, there are also mental health, economic, and social needs during disaster response and recovery. Health care institutions do have some social services capabilities, but in a large-scale incident they are quickly overburdened. The relationship between public health and health care is very important for supporting recovery in this regard, Martin said. For example, in the weeks following the Boston Marathon bombings, the U.S. Department of health and Human Services (HHS) provided a mental health response team of approximately 25 persons to help Boston increase its capacity to support the mental health needs of those impacted. As mentioned previously in the report, over 200 mental health support sessions were coordinated in the city of Boston and in surrounding areas, and thousands of individuals were served, with support from service providers from HHS, the Massachusetts Department of Mental Health, Red Cross, Salvation Army, and a number of other partners. A Family Assistance Center was set up within the first few days after the bombings, offering a range of services, including

mental health referral and support groups. As mentioned earlier in the report, many of the group visit counseling services were not covered by insurance plans. In addition, many of those injured at the marathon were not from Massachusetts, and may have had national plans or other state-based plans that may have had other exclusions. This is a prime example of the continuing need for public health emergency preparedness (PHEP) and hospital preparedness programs (HPP) to support state and local needs when routine insurance coverage does not meet the needs of the population in a disaster.

Shift in Public Health Practice

Public health is undergoing a lot of change simultaneously with the implementation of the ACA, DeSalvo said. As discussed in chapter 3, health departments are moving away from providing direct clinical services and toward promoting and protecting the health of the community, including maintaining important core functions such as emergency preparedness. This transformation is resulting in a declining public health clinical workforce to handle, for example, medical special-needs shelter staffing or distribution of medicines in the event of a pandemic. On the positive side, increased access to services under the ACA means that people will likely be in better general health when they arrive at a shelter in a disaster, and they will have financial access to care wherever they may be transported. There is also investment in community health centers through the ACA, which can be leveraged to augment the emergency response infrastructure. In addition, there should be more clinical data and other information available that will inform public health preparedness and response, and help to identify those populations at risk who may have a variety of special needs. However, funding would still be needed for these efforts. Overall, many speakers noted, public health and health care entities will continue to have primary responsibility for leading the nation in preparedness, response, and recovery (see Figure 8-1).

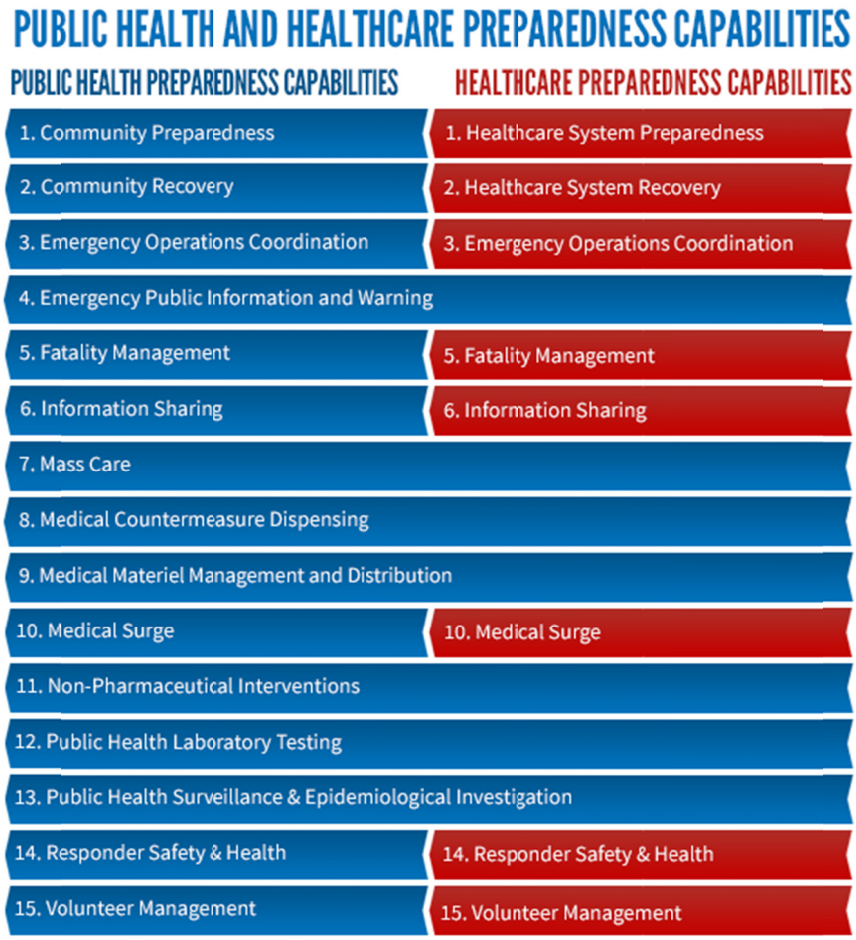

FIGURE 8-1 Integrating public health preparedness capabilities with health care preparedness capabilities.
SOURCE: Martin presentation, November 18, 2013

EXPANDING PUBLIC HEALTH CAPACITY AND REACH THROUGH PUBLIC–PRIVATE COLLABORATIONS

As both public health and health systems transform, and strive to be more efficient and effective while reducing costs, public–private partnerships are becoming increasingly important to achieving preparedness goals. The health information exchanges in Kansas (KHIN)

and New York (SHIN-NY) discussed by McGuire and Birkhead respectively (see chapter 6) are examples of public–private partnerships in health information technology (IT) that have broad applicability to preparedness. Also as discussed in chapter 6 relative to the use of predictive modeling, distribution of vaccines and medical countermeasures could be greatly enhanced by public–private partnerships, specifically, engaging retail pharmacies as partners. Dean and Hupert both described predictive models that were used to study the impact of additional dispensing partners. As concluded by Hupert's model, there was hypothetically adequate retail pharmacy capacity to provide antiviral prescriptions to people at the theoretical peak of the pandemic. However, even with theoretically sufficient supply in the Strategic National Stockpile (SNS), a logistics model suggested problems with the timing of acquiring product from the SNS to coordinate with the demand. A pilot program described by Dean tracks prescription drug use by the most vulnerable residents, and works with public and private providers to coordinate pharmaceutical care services for these individuals during a crisis. If ACA can promote more integrated care, the ease of connecting these services in a disaster will be much greater.

Individual participants discussed several other examples of public–private partnerships that are enhancing the capacity and reach of public health in the areas of threat assessment, immunizations, and countermeasures distribution, as well as the need for broad collaboration with community organizations and services.

Potential in Electronic Prescriptions

Surescripts began as an e-prescribing network and now processes between 5 and 6 million prescriptions every day, or more than half of the electronic prescriptions in the country. Garrett Dawkins, director of Transitions of Care and Public Health at Surescripts, LLC, shared several examples of how Surescripts is expanding to support a range of capabilities in clinical network services.

There are about 200,000 influenza-related hospitalizations every year, each costing on average $1,800. Factor in lost wages and other elements, and the typical flu season is estimated to cost $87 billion (Humer, 2013), Dawkins said. Although influenza vaccination is relatively easy, it is very hard to reach all of the population. During the

2012-2013 flu season, only 35 percent of adults and 55 percent of children received flu vaccinations.[2]

Dawkins described several elements that together could help to improve uptake: improving tracking of immunizations through reporting to registries; expanding reach into the community by leveraging the nation's more than 200,000 pharmacists trained to provide immunizations; providing better access to patient data at the point of care; and simplifying communications within the care community.

Dawkins highlighted several challenges of reporting immunizations to registries. There are 62 immunization registries in the United States, and Dawkins noted that they are not equally distributed across the country. As noted earlier in the report, a lack of standards, or implementtation of current national and international standards, across the industry and within each individual immunization registry (including data standards, transport standards, credentialing requirements, use of a national provider identifier) makes it difficult to share information with registries. One quarter of the registries do not provide automated notification of errors. Registries are bound by local laws, regulations, and politics (e.g., there are varied approaches to patient consent, multiple immunization registries in a state). There is also a wide distribution in the levels of staffing and funding across registries.

To help address this registry reporting issue, and try to facilitate better and more accurate data-sharing capability, Surescripts developed a simplified immunization registry reporting solution that provides one connection point to multiple local registries. The reporting solution manages local variances in messaging and field requirements, provides error message tracking and reporting, and manages the traffic loads.

Working with industry stakeholders, Surescripts also developed a care coordination solution to send notifications of immunizations to primary care providers (electronically, or via secure fax or mail if needed). Dawkins noted that registries can also serve as a critical data aggregation point for public health monitoring. As more providers and pharmacies connect to registries, this monitoring could be even more granular and useful. To spur innovation in this area, Surescripts issued a challenge at Health Datapalooza 2013 for development of a tool that

[2]These figures were based on preliminary influenza data for the 2012-2013 influenza season. The final data reflect vaccination rates of 57 percent for children (6 months to 17 years) and 42 percent for adults (18 years and older) (CDC, 2013).

could provide a graphical representation of the geographic spread of flu cases, and the predictability of future outbreaks, based on sample e-prescribing data.[3] The winning application can be used to identify hotspots of influenza in real-time, based on where medications are being prescribed. In a pandemic situation, Dawkins suggested that immunization information could be overlaid on the top of the prescribing data, and facilitate a more targeted response. With Meaningful Use Stage 1 objectives supporting the capability to provide data to immunization registries,[4] and ACA enabling first dollar coverage to increase access to immunizations (Shortridge et al., 2011), registries similar to Surescripts could plan for future needs, provide better coordination, and lead to improved clarification of reporting in emergency scenarios.

Mapping Vaccine Needs

Based in Santa Barbara, CA, Direct Relief is an international organization (working in 70 countries worldwide, including the United States) focused on improving the health of people living in poverty and those who are victims of natural disasters, war, and civil unrest. Direct Relief works to strengthen local health efforts and help fill critical gaps by working with private partners to donate essential material resources, including medicines, supplies, and equipment. Direct Relief is the only U.S. non-profit that is a verified, accredited, wholesale distributor certified by the National Board of Pharmacy. Direct Relief is licensed at the same level that major pharmacies such as CVS or Walgreens are to handle pharmaceutical products in all 50 states, explained Andrew Schroeder, director of research and analysis for Direct Relief. This is important, he said, because Direct Relief works across state lines.

One issue of interest to Direct Relief is patient assistance programs (PAPs), through which individuals who cannot afford essential medicines prescribed for them can apply directly to the pharmaceutical company to receive a supply. Schroeder noted that having the largest companies in the world dealing with individual patients is not particularly efficient. Thus, prior to the implementation of the ACA, Direct Relief began developing a replenishment program that hopes to

[3]See http://surescripts.com/company-initiatives/surescripts-technology-challenge (accessed June 9, 2014) for more information on the winning application.

[4]http://www.cms.gov/Regulations-and-Guidance/Legislation/EHRIncentivePrograms/downloads/MU_Stage1_ReqOverview.pdf (accessed May 20, 2014).

increase efficiency by aggregating this process so that products are shipped to clinical units, rather than to individuals. Leveraging the Direct Relief logistics network as a communications network, the organization conducted a survey about emerging concerns for safety net providers, including their anticipated use of PAPs after implementation of the ACA. Interviews were recorded and posted on the Direct Relief website, Schroeder said, to make sure that the voices of nonprofit health care leaders are heard in the debate.[5] Of the 350 nonprofit safety net facilities surveyed in 42 states, 93 percent of the respondents used PAPs to access medications, providing 43 percent of needed medications for their patients. Ninety-six percent responded that they still expect to use PAPs fairly extensively as an essential resource after the implementation of the ACA, as the coverage gaps will not be completely eliminated.

Another Direct Relief activity described by Schroeder is assessing the need for charitable influenza vaccine donations for safety net health centers. Schroeder noted the value of partners such as HealthMap.org, which assesses geo-coded news sources to map emerging infectious diseases, and Google Flu Trends, which estimates rates of influenza-like illnesses (ILIs) based on internet search queries. Direct Relief then looks at how, for example, the geographic distribution of emerging ILIs relates to the regions where Direct Relief is receiving significant requests for charitable donation of influenza vaccine from safety net health centers. This is not a commercial order, Schroeder explained, but a request for humanitarian assistance on the basis of an expectation of shortfall. Schroeder said that during the 2013 federal government shutdown, this information allowed Direct Relief to prepare for the flu season in the absence of updated information from the Centers for Disease Control and Prevention (CDC).

The Right Care, at the Right Place, and at the Right Time

Cairns discussed the National Collaborative for Bio-Preparedness (NCB-Prepared), for which he is a principal investigator.[6] He said that the goal of emergency care regionalization is to get the right care, at the right place, at the right time. Time is of the essence in many situations (e.g., heart attack, stroke), with the best outcomes resulting from interventions that are administered within minutes of the event.

[5]Available at http://www.directrelief.org/voices (accessed April 30, 2014).

[6]Cairns disclosed that the material in his presentation was based on work supported by the U.S. Department of Homeland Security grant #DHS10OHA122-001.

Mentioned earlier in the report, the provisions in the ACA legislation related to Regionalized Systems of Emergency Care, Section 3504, that transfer ownership of trauma care grant and research programs will now be housed within the Office of the Assistant Secretary for Preparedness and Response (ASPR). Improved pre-hospital and trauma care at a regional level on a day-to-day basis may be positively affected by ACA and could also have implications for surge management and regional disaster response.

The State of North Carolina faces major challenges in terms of mortality rates for cardiovascular causes. To help address this, the state organized providers, hospitals, and EMS systems to develop a destination plan so that any paramedic rig picking up any patient with a heart attack anywhere in the state would know exactly where to take them (Glickman et al., 2011). For very rural areas where transport to hospital could take too long, paramedics can administer clot-busting drugs in the ambulance en route. This statewide, population-inclusive approach to emergency care of myocardial infarction has reduced mortality across the state (Glickman et al., 2012). The key, Cairns said, is having all of the systems in place, including the care providers, the data, and the ability to respond, before the actual episode of heart attack occurs (Cairns and Glickman, 2012).

Following this model for regionalized emergency cardiac care, NCB-Prepared was designed to be a comprehensive state-wide system to enhance health security. NCB-Prepared is a public–private partnership including the University of North Carolina, North Carolina State University, the SAS Institute, the Department of Homeland Security (DHS) Office of Health Affairs, and the National Bio-Surveillance Integration Center. The goals of the project are to: have earlier recognition of outbreaks and health threats; augment bio-surveillance; improve situational awareness; provide better information for decision makers; and provide insight into the quality of care and management systems. Cairns added that integrating data, using advanced analytics, and providing value to the data partner will all work to achieve the goals of early recognition and initiation of mitigation strategies, regardless of the threat.

Cairns pointed out that typically, bio-surveillance is investigational, intended to determine the cause of an outbreak and mitigate the solution. NCB-Prepared is interventional, and action must be timely to be effective. The system has built a comprehensive set of data sources that provide a timely snapshot across geographic regions and informational

layers. Data sources include, for example, Poison Center data, Emergency Medical Service (EMS) data, 911 data, internet search data (e.g., Google Flu), and data from the National Bio-Surveillance Integration Center. The system also collects information on current hospital capabilities for North Carolina and surrounding states (e.g., Intensive Care Unit beds, dialysis machines) daily, and in the case of the disaster this can be updated every 2 hours.

Data collected from multiple sources must be turned into actionable information. Cairns described a text-analytic approach developed by the SAS Institute that can analyze why an event is happening, forecast what may happen if trends continue, and predict what could happen next and what is the best possible outcome (see Figure 8-3). The system takes millions of records through an automated data quality process, followed by real-time integrated analysis, and visualization.

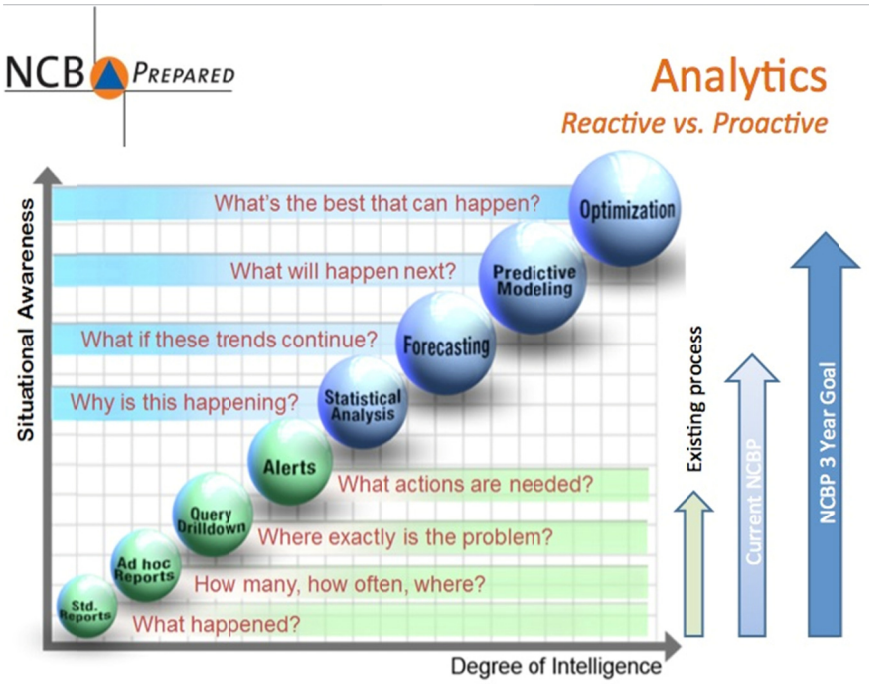

FIGURE 8-3 Existing reactive processes (green) and NCB-Prepared (NCBP) current and future proactive processes (blue) made possible by the text analytic approach to data analysis.
SOURCE: Cairns presentation, November 19, 2013.

Cairns shared an example of how, by analyzing unusual levels of search activity on the Google Flu Trends internet site and alerts from EMS data, NCB-Prepared was able to predict the 2012-2013 influenza outbreak 90 days before the CDC alert was issued. In the summer of 2013, an exercise was conducted in conjunction with DHS and the National Bio-Surveillance Integration Center demonstrating the system's ability to detect an unknown respiratory agent (flu data were entered into the actual data system for the exercise and, following the same data quality, data analytic, and visualization processes that are used every day, the system was able to detect the incidence of unusual activity across North and South Carolina). This works because it is used every day, negating the need to learn how to use in an emergency situation.

Community Organizations and Services as Key Partners in Resilience

The ACA focus on community-based care provides an opportunity to build more resilient communities, said Priest of MESH Coalition. As mentioned by many speakers, communities that are healthier before a disaster do better after disaster. Priest said there is an upper limit to how effective the preparedness capabilities of the health system can be. The preparedness community needs to think about surge management beyond what can be done in the hospital, for example, building community resilience, having neighbors who can help neighbors, taking health care to where people are (e.g., community paramedicine, discussed in chapter 4). This also means addressing the social determinants of health and thinking very broadly about what it means to be a healthy society. As the multiple provisions of ACA work towards building a more coordinated health care delivery system, emphasizing integration of services, managing population health, and promoting value based purchasing payment models, this could be an opportune time for building social capital and including community agencies in improving health outcomes. This is where there are very good alignments among health reform efforts, population health management, and good disaster management principles, Priest said. There will always be a need for acute care in emergencies, but there needs to be a balance with efforts toward better everyday health care. Martin said the bigger picture of resilience involves community-based organizations and larger scale institutions. All levels need to be working together toward preparedness. We need to take

a holistic view of resilience, tying public health and population-based care to health care, Martin concluded.

Challenges for Integrating Public and Private Health Efforts

With regard to partnerships for dispensing, there was some discussion as to whether, with the integrated systems discussed, people needing a countermeasure could be electronically identified and alerted (e.g., by phone or e-mail) that a countermeasure or vaccine has been e-prescribed at their local pharmacy for them to receive. Birkhead of the New York State Department of Health pointed out that the biodefense planning thus far at state and local levels relies on government resources and open points of dispensing (PODs). People are not billed for receiving countermeasures at PODs. To e-prescribe countermeasures for people to pick up at the local pharmacy would involve many different insurance plans that may or may not cover the cost, with varying amounts of co-insurance if they do. In a true emergency situation where it is essential to try to reach everybody quickly, we do not want to stop and take insurance information unless the process can somehow become very streamlined. He added that with regard to engaging the private health care sector (pharmacies and providers) in delivering countermeasures in general, even if the vaccine was provided free of charge, there is still the issue of the fee for administration. Some insurance plans cover administration and others do not, and it would still present a barrier for persons who are uninsured or underinsured. While alternatives to mass prophylaxis in public clinics are needed, he raised a concern that the private health care system is still so complicated that even with ACA, it will be a challenge to develop a comprehensive solution., highlighting further need for PHEP support. Birkhead said the real promise of accountable care organizations (ACOs) is that they can offer an economy of scale and a population-based focus. If a state health department can work with ACOs, vaccines can be delivered in a mass setting to a much larger group much more effectively, and perhaps lessen the need for local health departments to run vaccination clinics when they are often resource poor. However, he noted, New York State has not really engaged ACOs yet in pandemics or other emergency situations. ACOs are new partners, and a promising new avenue to try to engage and integrate the clinical community as health systems around the country work to streamline care, Birkhead concluded.

LOOKING FORWARD

While ACA is improving access to health insurance coverage through the marketplace and Medicaid expansion, there are parts of ACA that bear monitoring during and after implementation, especially regarding status of funding and implementation, said Terry Adirim, special consultant on maternal and child health at the Health Resources and Services Administration. The health care system is changing rapidly, and several participants discussed a variety of ways that the ACA implementation could enhance preparedness (e.g., new and expanded use of health IT), and expressed caution about the need to mitigate any negative impacts (e.g., reductions in disproportionate share hospital (DSH) payments to safety net hospitals).

Benjamin asked participants to envision a future where everyone has an insurance card, where data move freely, and where all of the integrated health systems are doing individual preparedness planning for their facilities, as well as coordinated preparedness planning for their communities. The ultimate goal is to have the best health outcomes possible, and to be able to return communities to full productivity after a disaster, he said.

Building resilience requires a whole health care community approach, said Margolis. It is time to stop thinking about preparedness as a separate activity. In order to be a truly prepared nation and a truly prepared health care system, we need to weave the thread of preparedness into the fabric of our daily health care system, he reiterated. There is the opportunity to make this happen in the coming years as the health care infrastructure is transformed. Citing Berwick's triple aims again, Margolis said that quality care, healthier populations, and lower cost are all interrelated, and achieving the triple aim is what leads us to be a prepared nation.

A

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B

Acronyms

ACA	Patient Protection and Affordable Care Act
ACO	accountable care organization
AHRQ	Agency for Healthcare Research and Quality
ARRA	The American Recovery and Reinvestment Act of 2009
ASPR	Office of the Assistant Secretary for Preparedness and Response (HHS)
CHNA	community health needs assessment
CMS	Centers for Medicare & Medicaid Services
DSH	Disproportionate Share Hospital
EHR	Electronic Health Record
FQHC	Federally Qualified Health Center
HERD	Health Care Emergency Response Data System
HHS	U.S. Department of Health and Human Services
HIPAA	Health Insurance Portability and Accountability Act
HITECH	Health Information Technology for Economic and Clinical Health Act
HIE	Health information exchange
HL7	Health Level Seven
HPP	Hospital Preparedness Program

IEP	Information Exchange Portal
ILI	influenza-like illness
IOM	Institute of Medicine
KHIN	Kansas Health Information Network
MHPAEA	Mental Health Parity and Addiction Equity Act of 2008
ONC	Office of the National Coordinator (HHS)
PCORI	Patients Centered Outcomes Research Institute
SHIN-NY	The Statewide Health Information Network of New York
SNS	Strategic National Stockpile

C

The Impact of *the Patient Protection and Affordable Care Act* on U.S. Preparedness Resources and Programs: A Workshop

STATEMENT OF TASK

An ad hoc committee will organize a public workshop that will examine potential public health and medical preparedness implications resulting from changes to the healthcare system through the *Patient Protection and Affordable Care Act* (ACA). The committee will develop the workshop agenda, select and invite speakers and discussants, and moderate the discussions. The committee will specifically consider the extent to which provisions are being funded and implemented across the nation and the corresponding effect on desired outcomes. Topics to be addressed at the workshop will include the following:

- Discuss opportunities for integrating public health/emergency preparedness services into new delivery system models (Accountable Care Organizations, integrated health systems and medical homes) and regional healthcare coalitions.
- Explore the potential impact the Public Health Sciences Track can have on public health and emergency preparedness workforce and professional expertise.
- Examine the potential impact of the implementation of provisions related to community health teams and alternate healthcare delivery systems.
- Consider opportunities to improve resiliency of communities provided by healthcare system changes and near universal coverage of individuals.

- Explore the potential effects of ACA provisions that can be leveraged for a sustainable workforce and the impact on preparedness levels within hospitals.

An individually authored workshop summary will be prepared by a designated rapporteur based on the information gathered and the discussions held during the workshop.

D

AGENDA

The Impact of the *Affordable Care Act* on
U.S. Preparedness Resources and Programs:
An Institute of Medicine Workshop

November 18-19, 2013

Lecture Room of the National Academy of Sciences Building
2101 Constitution Avenue, N.W., Washington, DC 20418

Background:

With many elements of the *Affordable Care Act* (ACA) going into effect in 2014, and the establishment of many new rules and regulations, there have been and will continue to be significant changes to the U.S. health system. However, it is not clear what impact these changes will have on medical and public health preparedness programs around the country. As funding for these programs continues to decline, leveraging changes in health care delivery and structure to enhance and increase individual and community preparedness becomes even more important.

This workshop will examine how the changes to the health system as a result of the ACA may impact the medical and public health preparedness programs across the nation, and how the ACA provisions may be leveraged to strengthen the resilience of the medical and public health preparedness systems. Beginning with discussions on changing financing and delivery, and moving to more detailed conversations on roles and

potential within threat identification and information technology infrastructure, participants will examine current and future opportunities for protecting the nation's health in disasters through new relationships and more integrated care.

Meeting Objectives:

- Explore opportunities to leverage benefits of health care reform and develop action steps that the preparedness community can take to mitigate identified challenges.
- Discuss challenges and benefits of the *Affordable Care Act* to disaster preparedness and response efforts around the country.
- Consider how changes to payment and reimbursement models will present opportunities and challenges to strengthen disaster preparedness and response capacities.
- Explore potential impacts that the changing health care delivery infrastructure may have on disaster preparedness and response.
- Consider how impacts on the health system workforce may impact resilience, emergency preparedness, response, mitigation, and recovery.
- Explore how changes to data collected through health information technology may be used to strengthen community resilience.
- Evaluate needs and opportunities in data collection, surveillance, and communication for robust threat identification and public health response

November 18, 2013

8:30 a.m. Welcome and Introductions

GEORGES BENJAMIN, *workshop co-chair*
Executive Director
American Public Health Association

GREGG MARGOLIS, *workshop co-chair*
Director
Division of Health Systems and Health Care Policy
Office of the Assistant Secretary for Preparedness and Response

8:40 a.m. Keynote: Challenges and Opportunities for Public Health and Health Care Preparedness

NICOLE LURIE
Assistant Secretary for Preparedness and Response
Department of Health and Human Services

SESSION I: Overview of the *Affordable Care Act* Provisions and Financing Changes

Session Objectives:

- Discuss changes taking place within health care delivery reform and possible implications on preparedness.
- Explore a case study of Massachusetts health reform and its impact on preparedness and response.
- Consider how changes to payment and reimbursement models will present opportunities and challenges to strengthen disaster preparedness and response capacities.

9:10 a.m. How the Health Delivery System Will Be Changing and Lessons Learned in Massachusetts since 2006

BRUCE RUEBEN
President
Florida Hospital Association

LISA TOFIL, *planning committee*
Partner
Holland & Knight

S. ATYIA MARTIN
Director, Office of Public Health Preparedness
Boston Public Health Commission

10:10 a.m. Discussion with Attendees

10:40 a.m. BREAK

11:00 a.m. Opportunities and Challenges within Financing Changes

JACK EBELER, *planning committee*
Principal
Health Policy Alternatives

KAREN DESALVO
Health Commissioner
City of New Orleans

11:40 a.m. Discussion with Attendees

12:00 p.m. LUNCH

SESSION II: Impacts of Changes in Health Care Workforce and Delivery

Session Objectives:

- Explore potential impacts that changing health care delivery infrastructure may have on disaster preparedness and response.
  - Discuss community health models and systems integration to augment population health care.
- Consider how impacts on the health system workforce may impact resilience, emergency preparedness, response, mitigation, and recovery.

1:00 p.m. Session Chair: Introduction and Overview of Objectives

CHARLES CAIRNS
Chair of Emergency Medicine
University of North Carolina
Principal Investigator of the National Collaborative for Bio-Preparedness

1:15 p.m. Panel Discussion: Impacts of Changing Physical and Social Infrastructure

XIAOYI HUANG
Assistant Vice President for Policy
America's Essential Hospitals

NORMAN MILLER
Trauma System Administrator
Mississippi State Department of Health

MATT ZAVADSKY, *planning committee*
MedStar Mobile Community Health Program

2:15 p.m. Discussion with Attendees

2:45 p.m. BREAK

3:05 p.m. Panel discussion: New Expectations and Capabilities of Preparedness Workforce

ELLEN EMBREY
Managing Partner, Stratitia
Former Deputy Assistant Secretary of Defense
Force Health Protection & Readiness
Department of Defense

ANI TURNER
Deputy Director
Center for Sustainable Health Spending
Altarum Institute

"View from the ground"

CHAD PRIEST
MESH Coalition
Indianapolis, IN

4:00 p.m. Discussion with Attendees

4:30 p.m. ADJOURN

November 19, 2013

8:30 a.m. Welcome and Introduction

GEORGES BENJAMIN, *workshop co-chair*
Executive Director
American Public Health Association

GREGG MARGOLIS, *workshop co-chair*
Director
Division of Health Systems and Health Care Policy
Office of the Assistant Secretary for Preparedness and Response

SESSION III: Information Infrastructure

Session Objective:

- Explore how changes to data collected through health information technology may be used to strengthen community resilience.
  - Discuss corresponding benefits and barriers to greater access to patient and population data in disasters.

8:40 a.m. Session Chair: Introduction and Overview of Objectives

KEVIN LARSEN
Medical Director of Meaningful Use
Office of the National Coordinator for Health Information Technology
Department of Health and Human Services

8:50 a.m. Panel Discussion: Opportunities for Enhanced Resilience through Technology: Aggregate and Individual Patient Focus

ROLAND GAMACHE
Director, Public Health Informatics
National Association of County and City Health Officials

JUSTIN BARNES
Vice President
Greenway Medical Technologies
Board Member, CommonWell Health Alliance

JAMES MARCIN
Director, Pediatric Telemedicine Program
University of California, Davis
Telemedicine program – consultations to remote hospitals

"View from the ground"

CONNIE CHAN
Project Director, PCCI
Dallas, TX

9:50 a.m. Discussion with Attendees

10:15 a.m. BREAK

SESSION IV: Needs and Opportunities for Threat Identification and Public Health Response

Session Objective:

- Evaluate needs and opportunities in data collection, surveillance, and communication for robust threat identification and public health response.
    - Discuss roles for public health in mass vaccinations or routine immunization provision.

10:30 a.m. Session Chair: Introduction and Overview of Objectives

GEORGES BENJAMIN, *workshop co-chair*
Executive Director
American Public Health Association

10:40 a.m. Panel Discussion: Data Collection, Surveillance, and Communication: Potential for Enhancing Threat Identification

GARRETT DAWKINS
Director, Transitions of Care and Public Health
Surescripts, LLC

GUS BIRKHEAD
Deputy Commissioner and Director of Public Health Programs
New York State Department of Health

CHARLES CAIRNS
Chair of Emergency Medicine
University of North Carolina
Principal Investigator of the National Collaborative for Bio-Preparedness

"View from the ground"

ANDREW SCHROEDER
Director of Research and Analysis
Direct Relief

11:40 a.m. Discussion with Attendees

12:10 p.m. LUNCH

1:10 p.m. Panel Discussion: Continuing Roles for Public Health Response: Mass Immunization/Medical Countermeasure Delivery and Public–Private Partnership

NATHANIEL HUPERT
Associate Professor of Public Health and Medicine
Weill Cornell Medical College

BRANDON DEAN
Staff Analyst
Los Angeles County Department of Public Health

"View from the ground"

MICHELLE MCGUIRE
Senior Project Manager
Kansas Health Information Network

2:10 p.m. Discussion with Membership

2:35 p.m. BREAK

SESSION V: "Views from the Ground"

Session Objective:

- Explore opportunities to leverage benefits of health care reform and action steps the preparedness community can take to mitigate identified challenges.
  - Review perspectives of "on the ground" panelists and top areas for the preparedness community to capitalize on moving forward.

2:50 p.m. Session Chair: Introduction and Overview of Objectives

TERRY ADIRIM, *planning committee*
Special Consultant, Maternal and Child Health
Health Resources and Services Administration
Department of Health and Human Services

3:00 p.m. Response Panel: Views from the Ground across Focus Areas

KAREN DESALVO
Health Commissioner
City of New Orleans

CONNIE CHAN
Project Director, PCCI
Dallas, TX

ANDREW SCHROEDER
Director of Research and Analysis
Direct Relief

MICHELLE MCGUIRE
Senior Project Manager
Kansas Health Information Network (KHIN)

4:00 p.m. Discussion with Attendees

4:20 p.m. Next Steps: Key takeaway messages

- What issues have not been addressed?
- How can people engage their communities to pass on lessons learned?

4:45 p.m. ADJOURN

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Biographical Sketches of Invited Speakers and Panelists

Georges Benjamin, M.D., FACP, FACEP(E), FNAPA, Hon FRSPH ***(Workshop Co-Chair)*** is the executive director of the American Public Health Association, the nation's oldest and largest organization of public health professionals. He previously was the secretary of the Maryland Department of Health and Mental Hygiene, from 1999 - 2002 following four years as its deputy secretary for public health services. For the last 20 years he has been actively practicing public health at the local, state, and national level with expertise in the areas of emergency preparedness, administration, and infectious diseases. Dr. Benjamin serves as publisher of the field's premier journal, the *American Journal of Public Health*, *The Nation's Health* Newspaper and the APHA's timeless publication on infectious diseases, the *Control of Communicable Diseases Manual*. He is the author of more than 100 scientific articles and book chapters. His recent book *The Quest for Health Reform: A Satirical History* is an exposé of the nearly 100 year quest to ensure quality affordable health coverage for all through the use of political cartoons. Dr. Benjamin is a graduate of the Illinois Institute of Technology and the University of Illinois College of Medicine. He is board-certified in internal medicine and a fellow of the American College of Physicians. He also is a fellow emeritus of the American College of Emergency Physicians, an honorary fellow of the Royal Society of Public Health, a fellow of the National Academy of Public Administration, and a member of the Institute of Medicine.

Gregg Margolis, Ph.D. ***(Workshop Co-Chair)*** is the Director of the Division of Healthcare Systems and Heath Policy for the Office of the

Assistant Secretary of Preparedness and Response (ASPR) at the US Department of Health and Human Services (HHS). He leads a team of policy experts in formulating, analyzing and implementing policies to build strong, integrate, and resilient health systems that are prepared to respond to and recover from disasters and public health emergencies. Prior to his federal service, Dr. Margolis was the Associate Director of the National Registry of Emergency Medical Technicians (NREMT), a nonprofit organization that serves as the national certification agency for nearly 300,000 Emergency Medical Services (EMS) professionals. Dr. Margolis has held leadership positions and faculty appointments at the George Washington University, the University of Pittsburgh, and the Center for Emergency Medicine of Western Pennsylvania. In 2009-2010, Dr. Margolis was the first paramedic to be awarded a Robert Wood Johnson Health Policy Fellowship, where he served in the Office of Senator John D. Rockefeller.

Terry Adirim, M.D., M.P.H., is a Special Consultant at the Health Resources and Services Administration (HRSA), an operating division of the Department of Health and Human Services (HHS). Previously, from 2010 to 2013, she was the director of the Office of Special Health Affairs of HRSA and from March 2011 to July 2012 was also the lead for the Affordable Care Act Maternal, Infant and Early Childhood Home Visiting Program which is a 5-year, $1.5 billion dollar program that provides funding to states, territories, and tribal communities to provide evidence-based home visiting services to at-risk families. At the Department of Homeland Security (DHS) from 2006 to 2010, she worked in various capacities in the DHS Office of Health Affairs, initially as an American Association for the Advancement of Science (AAAS) Policy Fellow and then as the Associate Chief Medical Officer for Medical Readiness and Senior Advisor to the Assistant Secretary for Health Affairs. From 2004 to 2006, Dr. Adirim was associate professor of Emergency Medicine and Pediatrics at Drexel University College of Medicine and interim director of Emergency Medicine at St. Christopher's Hospital for Children in Philadelphia Pennsylvania. From 1997 to 2004, she was associate professor of Pediatrics and Emergency Medicine at the George Washington University School of Medicine and attending physician at Children's National Medical Center in Washington, DC. While in academic clinical medicine, she was awarded over 3 million dollars in grant funding from the CDC and the Maternal and Child Health Bureau/HRSA to support her research and project work

and has over 70 publications. Dr. Adirim received her B.A. degree from Brandeis University, her medical degree with research distinction from the University of Miami School of Medicine, and her master's degree in public health from the Harvard School of Public Health. She completed pediatric residency training at the Children's Hospital of Philadelphia, fellowship training in pediatric emergency medicine at Children's National Medical Center in Washington, DC and primary care sports medicine at the Uniformed Services University of the Health Sciences in Bethesda, Maryland.

Justin T. Barnes, B.A., B.S., FHIMSS, is a Vice President with Greenway Medical Technologies and manages Greenway's Industry, Government, and International Affairs. He is a healthcare software executive and public policy advisor for Greenway. In addition, Mr. Barnes is Chairman Emeritus of the HIMSS Electronic Health Record (EHR) Association as well as Co-Chairman of the Accountable Care Community of Practice where he assists both organizations with industry strategy and leadership. He is a regular public speaker on issues relating to value-based medicine, accountable care, ACOs, interoperability, standards, EHR meaningful use, consumerism, health IT innovation, health information exchange, patient safety, patient engagement, quality, healthcare privacy, security, confidentiality and the globalization of healthcare. Mr. Barnes has been published in more than 650 journals, magazines, and broadcast media outlets relating to national leadership of health IT and electronic health records.

Guthrie Birkhead, M.D., M.P.H., is Deputy Commissioner and director of the Office of Public Health at the New York State Department of Health. He is the chief public health physician in the Department and directs public health programs in communicable disease control including AIDS, maternal child health, chronic disease prevention, nutrition, environmental health and the public health laboratory. He served on the federal Advisory Committee on Immunization Practices and chaired the National Vaccine Advisory Committee. He is board certified in internal medicine and preventive medicine. He is also Professor of Epidemiology at the School of Public Health at the University at Albany.

Charles Cairns, M.D., FACEP, FAHA, is Professor and Chair of the Department of Emergency Medicine at the University of North Carolina

at Chapel Hill. He previously served as the Director of Emergency Research at the Duke Clinical Research Institute (2004-2008), the largest academic research organization in the world. For the last 20 years, Dr. Cairns has been a clinician, educator, and investigator in emergency and critical care focused upon acute cardiac, trauma, respiratory, and infectious disease for applications in emergency medical care, regionalization, and preparedness at the local, state, and national level. He is the Principal Investigator of the DHS/NBIC National Collaborative for Bio-preparedness and has served as the PI of the NQF Regionalization of Emergency Medical Care Services Framework Project, the Co-PI of the HHS/ASPR Rapid Assessment of Acute Illness and Injury to Enhance the U.S. Response to Public Health Emergencies project and the Associate Director of the NIH U.S. Critical Illness and Injury Trials Group. Dr. Cairns has published over 150 scientific articles and reviews, and has received numerous awards and honors, including the Emergency Medicine Foundation (EMF) Established Investigator Award, the Society for Academic Emergency Medicine (SAEM) Research Presentation Award, and the American College of Emergency Physicians (ACEP) Outstanding Contribution in Research Award. Dr. Cairns has served in leadership positions within organized emergency and critical care, including Co-Chair of the ACEP-SAEM Research Working Group, the EMF Board of Trustees, the Leadership Committee for the American Heart Association (AHA) Council on Cardiopulmonary and Critical Care, the Steering Committee for the Critical Care Societies Collaborative (CCSC) Task Force on Critical Care Research, the NIH National Asthma Education and Prevention Program, the Steering Committee for the NIH Roundtables on Medical and Surgical Emergencies, and as Co-Chair of the NIH Roundtable on Emergency Trauma. Dr. Cairns is a graduate of Dartmouth College and the University of North Carolina School of Medicine. He is board-certified in emergency medicine, a fellow of the American College of Emergency Physicians, and a fellow of the American Heart Association.

Connie Chan, Ph.D., is project director at PCCI, a non-profit research and development organization in Dallas, TX dedicated to eliminating adverse clinical events using advanced analytics and software technologies. She leads the Information Exchange Portal effort, which aims to electronically connect clinical and social service organizations to improve care coordination, access to services, and health outcomes, particularly for the most vulnerable patients. Dr. Chan is a graduate of

the School of Foreign Service at Georgetown University and received her doctorate in Public Health Informatics from Columbia University.

Garret Dawkins, M.B.A., is the Director of Transitions of Care and Public Health Services at Surescripts, the nation's largest clinical health information network. He was previously Director of Solutions Management at Allscripts where he led Allscripts' MU Stage 2 Public Health Reporting Solutions and Patient Engagement Portfolio. Prior to Allscripts, Mr. Dawkins led a joint development initiative between Nortel and IBM focused on imbedding communication tools within Healthcare IT system. He is a graduate of Wake Forest University with a B.A. in English and Masters in Business Administration.

Brandon Dean, M.P.H., is the Risk-Based Planning Manager for the Emergency Preparedness and Response Program in the Los Angeles County Department of Public Health. He received his B.A. from Brigham Young University and M.P.H. from the University of California Los Angeles, specializing in emergency public health. In seven years with Los Angeles County, Brandon has become one of the primary analysts and emergency planners of the department, creating, testing and improving public health emergency response plans and policies. In particular, he has become the department's point person in development and application of mathematical disease modeling for improved strategic planning and operational responses. He also serves on NIH/NIGMS' Models of Disease Agent Study (MIDAS) Steering Committee.

Karen Desalvo, M.D., M.P.H., M.Sc., is the Health Commissioner for the City of New Orleans and serves as Senior Health Policy Advisor to Mayor Mitch Landrieu. Since assuming office in 2011, she has led a major transformation of the City Health Department into a modernized one with improved effectiveness and efficiency capable of improving the public's health where they live, learn, work and play. The innovative programs in the department include programs addressing the social determinants of health, violence and murder reduction and Fit NOLA, the City's nutritional and physical fitness program. Before joining the City, Dr. DeSalvo had 20 years of experience in medical education, clinical care, research and policy aimed at improving access to quality, affordable care for all. Following Hurricane Katrina, she was a leader in the effort to create the nationally recognized model of neighborhood-based medical homes for low income, uninsured and other vulnerable

populations in the New Orleans area. Dr. DeSalvo practices internal medicine and is on leave from Tulane School of Medicine where she was formerly the Vice Dean for Community Affairs and Health Policy. She has led and served on numerous local and national professional boards including President of the Louisiana Health Care Quality Forum and is currently serving on the Board of Directors for the National Association of City and County Health Officers. She received her M.D. and M.P.H. at Tulane University, a Masters in Clinical Epidemiology from the Harvard School of Public Health, and her B.A. from Suffolk University.

Jack Ebeler, M.P.A., is a principal at Health Policy Alternatives (HPA), a Washington, DC-based consulting firm. In 2009 and 2010, he worked on Capitol Hill on the development of health reform legislation, serving on the staff of the U.S. House of Representatives Committee on Energy and Commerce. Before joining the House Committee staff for the health reform debate, he was an independent consultant and served as a member and then vice-chair of the Medicare Payment Advisory Commission (MedPAC) as the Commission was advancing substantial Medicare payment and delivery reforms. Prior to that, he was president and CEO of the Alliance of Community Health Plans; and senior vice president and the initial director of the Health Care Group at the Robert Wood Johnson Foundation. In 1995 and 1996 he served in the U.S. Department of Health and Human Services as Deputy Assistant Secretary for Planning and Evaluation/Health and then as Acting Assistant Secretary for Planning and Evaluation.
Earlier, Mr. Ebeler held positions in managed care leadership (at HealthPartners in Minnesota) and on Capitol Hill. In the late seventies and early 80s, he was special assistant to the Administrator of the Health Care Financing Administration (now CMS). He recently rejoined the Health Care Services Board of the Institute of Medicine (IOM) and the Board ofTrustees of Inova Health System, and serves as co-chair of the Public Policy Advisory Council of the March of Dimes. He previously served on the Boards of Directors of the National Academy of Social Insurance (NASI), Families USA, and the National Center for Healthcare Leadership, on a number of national advisory committees, and as a member, chair and vice-chair of several IOM and NASI study committees on a broad range of topics. He has a Masters in Public Administration from the John F. Kennedy School of Government at Harvard University, and a B.A. from Dickinson College in Carlisle, PA.

Ellen P. Embrey, is President and Chief Executive Officer of Stratitia, Inc., a strategy and management consulting firm specializing in supporting clients that serve the healthcare, national security, and information technology sectors. She also is a counselor in The Cohen Group, a firm that provides global business consulting services and advice on tactical and strategic opportunities in virtually every market. Ms. Embrey has extensive executive and program leadership experience in the executive branch of the federal government. In her last federal role, she served as the Assistant Secretary of Defense (Health Affairs) and the Director, TRICARE Management Activity during the presidential transition period in 2009-2010. In that capacity, she led and managed the Military Health System, a $47 billion/year defense health program employing more than 200,000 health professionals serving more than 9.6 million service members, retirees, and their families in more than 70 hospitals and 500 clinics and laboratories around the globe. As Deputy Assistant Secretary of Defense (Force Health Protection and Readiness), Ms. Embrey orchestrated significant improvements in Department of Defense policies and programs from 2002-2009, affecting deployment and combat casualty medicine, health promotion and preventive medicine, medical readiness and public health emergency preparedness and response. As DoD's "line of action" lead for addressing traumatic brain injuries and/or post traumatic stress disorder, she led collaborative efforts to identify gaps and prioritize investments in TBI & PTSD research, align clinical practices of DoD and VA, and establish new US ICD9 codes for traumatic brain injury diagnoses and treatment based on DoD/VA experience. Throughout 2001, during the presidential transition period, Ms. Embrey served as the Assistant Secretary of Defense for Reserve Affairs, shaping policies affecting the readiness and use of the National Guard and Reserve in both federal and state status. From 2000 to 2001, she served as Chief of Staff of that office, and from 1998 to 2001, as Deputy Assistant Secretary of Defense for Military Assistance to Civil Authorities, developing policies that shaped the role of the National Guard and Reserve components in supporting homeland security, disaster preparedness, and national disaster response capabilities, including advising the president on such matters in the days and weeks following September 11, 2001. Between 1975—1997, Ms. Embrey served in a variety of senior-level policy, budget, program, management and systems analyst positions in the Office of the Assistant Secretary of Defense for Reserve Affairs, the Defense Contract Audit Agency, and the Office of Personnel

Management. Over her distinguished 35 year federal career, Ms. Embrey received many awards, the highest of which include two Secretary of Defense Distinguished Civilian Service Awards, in 2001 and 2004, and two Presidential Meritorious Executive Rank Awards, in 2006 and 2009.

Roland Gamache, Ph.D. is the Director of Public Health Informatics at the National Association of County and City Health Officials (NACCHO). Prior to his arrival at NACCHO, he was the Director of the State Health Data Center at the Indiana State Department of Health (ISDH), where he worked for 15 years. He also served as the Director of the Public Health Preparedness Program at the ISDH for two years during this time. Dr. Gamache's research focuses on the application of public health data analysis in the areas of public health assessment and evaluation, policy development, data systems integration, strategic planning, quality improvement, and public health preparedness activities. Dr. Gamache's recent work is in the development of integrated data systems for public health data needs. This work places an emphasis on database design for the improvement of analysis time, integration of public health systems with community-based Health Information Exchanges, and on improving the dissemination of public health information in an effort to measure and improve the health resiliency of the community. Dr. Gamache received his B.S. in Chemistry from the University of Lowell, M.B.A. from Indiana University, and a Ph.D. in Chemistry from Purdue University.

Xiaoyi Huang, J.D., B.S., is the assistant vice president for policy at America's Essnetial Hospitals. She directs the organization's policy portfolio (both legislative and regulatory) for all advocacy issues and leads the association's policy initiatives to protect and promote the short- and long-term interests of hospitals that care for the vulnerable. Prior to joining America's Essential Hospitals, Huang worked at the U.S. Government Accountability Office, where she led engagement teams to analyze current health policy issues and developed reports for Congress, as well as the Massachusetts Office of the Inspector General, where she evaluated state agency's administration of and hospitals' compliance with the uncompensated care pool program. Huang holds a Bachelor of Science in Business Administration from Boston University School of Management and a Juris Doctor from Boston University School of Law.

Nathaniel Hupert, M.D., M.P.H., is a primary care internal medicine specialist and a researcher in public health emergency response and medical decision making. He is an Associate Professor of Public Health and Medicine at Weill Cornell Medical College in New York City. He trained at Harvard Medical School, the University of Pittsburgh Medical Center, and the Harvard School of Public Health. His research concerns a number of topics that fall under the heading of "computational public health," the application of mathematical and simulation modeling techniques to health problems that extend beyond the bounds of traditional epidemiology. Since September 2000, he has collaborated with local, state, federal, and international public health officials in a series of federally financed research projects on hospital and clinical preparedness for bioterrorism. In the course of this research, Dr. Hupert led the development of a series of computer simulations to study mass antibiotic distribution and hospital capacity in the event of a large-scale release of a bioweapon or other catastrophic health event. Since 2005, Dr. Hupert has worked in close collaboration with colleagues in the Engineering/Operations Research community to bring state-of-the-art engineering solutions to critical public health problems. Locally, these collaborative efforts have been formalized with the creation of the cross-campus Institute for Disease and Disaster Preparedness, co-led by Dr. Hupert and Professor Jack Muckstadt at Cornell University. Dr. Hupert serves on the Anthrax Modeling Working Group of the U.S. Department of Health and Human Services (DHHS) and was a member of the 2007 RAND Expert Panel on Defining Public Health Preparedness. He has participated in a number of national webcasts on bioterrorism preparedness for the CDC's Strategic National Stockpile program and for the DHHS Agency for Healthcare Research and Quality. Dr. Hupert received his A.B., M.P.H., and M.D. from Harvard University.

Kevin L. Larsen, M.D., is Medical Director of Meaningful Use at the Office of the National Coordinator for Health IT. In that role he is responsible for coordinating the clinical quality measures for Meaningful Use Certification and oversees the development of the Population Health Tool http://projectpophealth.org. Prior to working for the federal government he was Chief Medical Informatics Officer and Associate Medical Director at Hennepin County Medical Center in Minneapolis, Minnesota. He is also an Associate Professor of Medicine at the University of Minnesota. Dr. Larsen graduated from the University of Minnesota Medical School and was a resident and chief medical resident

at Hennepin County Medical Center. He is a general internist and teacher in the medical school and residency programs. His research includes health care financing for people living in poverty, computer systems to support clinical decision making, and health literacy. In Minneapolis he was also the Medical Director for the Center for Urban Health, a hospital, community collaboration to eliminate health disparities. He served on a number of state and national committees in informatics, data standards and health IT.

Nicole Lurie, M.D., M.S.P.H., is the Assistant Secretary for Preparedness and Response (ASPR) at the U.S. Department of Health and Human Services (HHS). As such, she serves as the Secretary's principal advisor on matters related to bioterrorism and other public health emergencies. Her office is the lead agency for federal public health and medical preparedness and response, helping the nation prepare for, respond to, and recover from disasters. Prior to her current position, she served as Senior Natural Scientist and Paul O' Neill Alcoa Professor of Health Policy at the RAND Corporation. There she directed RAND's public health and preparedness work as well as RAND's Center for Population Health and Health Disparities. She had previously served in federal government as Principal Deputy Assistant Secretary of Health for HHS, in state government as Medical Advisor to the Commissioner at the Minnesota Department of Health, and in academia as Professor in the University of Minnesota Schools of Medicine and Public Health. Dr. Lurie has a long history in the health services research field, primarily in the areas of access to and quality of care, managed care, mental health, prevention, public health infrastructure and preparedness, and health disparities. Dr. Lurie attended college and medical school at the University of Pennsylvania, and completed her residency and M.S.P.H. at UCLA, where she was also a Robert Wood Johnson Foundation Clinical Scholar. She served as Senior Editor for *Health Services Research*, and on editorial boards and as a reviewer for numerous journals. She has served on the council and was President of the Society of General Internal Medicine, on the Board of Directors for Academy Health, and on multiple other national committees. Dr. Lurie continues to practice clinical medicine in the health care safety net in Washington, DC.

James Marcin, M.D., M.P.H., is a Professor of Pediatric Critical Care at the University of California Davis Children's Hospital in Sacramento. In addition to his clinical work in the Pediatric Intensive Care Unit at UC

Davis, he directs the Pediatric Telemedicine Program in the Center for Health and Technology and is very active in research in pediatric quality of care and telemedicine, particularly among acutely ill and injured children. Dr. Marcin has been conducting telemedicine consultations for more than 10 years and has worked closely with other clinicians, administrators, technicians and health policy makers to support the use of clinical telemedicine. He is the founding and immediate past chair of the Pediatric Telehealth Special Interest Group in the American Telemedicine Association, is on the Committee for Pediatric Workforce in the American Academy of Pediatrics, and is on the State of California's Technical Advisory Committee for California Children's Services. He conducts research in telemedicine and quality of care, particularly as it relates to acutely ill and injured children in the Emergency Department and the Intensive Care Unit. He has been Principal Investigator on grants from AHRQ, HRSA and EMS-C investigating the impact of telemedicine on quality of care and other patient outcomes. Dr. Marcin has also been a faculty advisor and mentor to 40 undergraduate students, medical students, pediatric residents, as well as students in the School of Public Health, Graduate Group in Epidemiology, and Graduate Group in Health Informatics. He has volunteered on 13 international medical missions, serves as a faculty volunteer to a medical student run free clinic and is a proud member of Physicians for Social Responsibility. He obtained his B.S. in biomedical engineering at UC San Diego in 1988 and his M.D. at UC San Diego in 1992. He completed his residency in Pediatrics at UC San Francisco in 1995 and his pediatric critical care fellowship at the Children's National Medical Center in Washington DC in 1998. He obtained a M.P.H. at The George Washington University in 1998.

S. Atyia Martin, M.P.S., EMT-B, is the Director of the Office of Public Health Preparedness at the Boston Public Health Commission (BPHC). In this role, she is responsible for coordinating emergency management across internal BPHC programs and services, as well as across public health and healthcare system partners. This includes oversight of the Stephen M. Lawlor Medical Intelligence Center which coordinates response and recovery efforts across public health, medical, and public safety partners during emergencies that impact public health. Additionally, Ms. Martin is on the Executive Committee of the Boston Healthcare Preparedness Coalition, which is an emergency preparedness collaboration among public health, EMS, healthcare, and public safety

entities. She has a diverse set of experiences in emergency management, intelligence, and homeland security. Ms. Martin was most recently the director of the DelValle Institute for Emergency Preparedness. Among her previous positions, she served as a Senior Analyst and later the Homeland Security Supervisor and Acting Director at the Boston Regional Intelligence Center at the Boston Police Department. Additionally, she served as the regional planner for the City of Boston's Mayor's Office of Emergency Management where she coordinated critical infrastructure and information sharing projects for the Urban Area Security Initiative Homeland Security Grant Program. In this role, she also managed public-private emergency preparedness, emergency notifications, and emergency operations planning. Ms. Martin was also a civilian at the Federal Bureau of Investigations (FBI) in the Boston Field Intelligence Group (FIG) and active duty Air Force assigned as a Serbian/Croatian linguist and analyst to the National Security Agency. She holds an Associate of Arts in Serbian Croatian from the Defense Language Institute (DLI), Bachelor of Science from Excelsior College, and a Masters of Professional Studies (MPS) in Homeland Security Leadership from the University of Connecticut. She is currently pursuing her Doctorate in Law and Policy from Northeastern University. She is also a certified Emergency Medical Technician and Basic Life Support Instructor.

Michelle McGuire, B.S., CPHIMSS, has a degree in computer processing and seventeen years of experience in the health information industry. She has experience in managing deployment of solutions for clients changing business flow to electronic medical records. Ms. McGuire is currently a Senior Project Manager for Kansas Health Information Network (KHIN) managing multiple projects for bringing hospitals and clinics into the health exchange. She has authored articles on sales and marketing, billing, and preparing for ICD-10 changes. She has her Certified Professional Health Information and Management Systems certification, CPHIMS. Ms. McGuire is the HIE liaison on the KSHIMSS board of directors.

Norman W. Miller, Ph.D., is the Trauma System Administrator at the Mississippi State Department of Health. In this position, he provides administrative oversight of the Mississippi Trauma Care System, comprised of 83 hospitals and 56 Emergency Medical Services providers, organized in seven Trauma Care Regions. Additionally, he

manages the development and implementation of a state-wide system of care for ST-Elevated Myocardial Infarction (STEMI) and Acute Ischemic Stroke. Dr. Miller served 28 years in the U.S. Air Force and Air National Guard, retiring with the rank of Colonel. He was rated as a Master Navigator with over 2,500 flying hours in KC-135, B-52, and F-4 aircraft, and served in Operations Just Cause (Panama), Desert Shield (Saudi Arabia), Restore Hope (Rwanda), Allied Force (Kosovo), and Iraqi Freedom (Iraq). Dr. Miller is a graduate of Northeastern Illinois University and Kennedy-Western University, and an Outstanding Graduate of the Air War College.

Chad Priest, R.N., M.S.N., J.D. is the Chief Executive Officer at MESH, Inc. Drawing upon his clinical, military, legal and policy experience, Mr. Priest works with coalition members and stakeholders to enable healthcare providers to effectively respond to emergency events and remain viable through recovery. Prior to joining MESH, he was an attorney at the law firm of Baker & Daniels practicing public health and healthcare law in the Indianapolis andWashington, D.C. offices. While at Baker & Daniels Chad represented a variety of health care entities, including HMOs, Medicaid MCOs, PHOs, ambulatory surgical centers, comprehensive rehabilitation centers, physicians, nonprofit health care grant agencies and foundations, long-term care facilities, hospitals, provider networks and public health organizations. Utilizing his background in healthcare and emergency preparedness, he provided specialized counseling to clients on public health related matters. He also worked with health care and other social service clients on advocacy, public policy and legislative matters at the state and local level. Mr. Priest served on active duty in the United States Air Force as Family Practice Primary Care Optimization Nurse, 89th Medical Group, Andrews Air Force Base, Maryland. While in the military he specialized in emergency preparedness related issues. He received a B.S.N. and M.S.N. from Indiana University School of Nursing and a law degree from The George Washington University.

Bruce Rueben, M.B.A., B.B.A., is President of the Florida Hospital Association (FHA), a state association that represents 238 hospitals and healthcare systems. As President, Mr. Rueben leads a staff of 44 professionals who provide state and federal advocacy, representation, data and research, regulatory, communications, and a myriad of services to member hospitals. Prior to joining FHA, Mr. Rueben was President of

the Minnesota Hospital Association. He led the hospital community's efforts to enact effective health policy in Minnesota and helped shape health policy nationally. The association's primary efforts centered around healthcare financing, patient safety, workforce development and data collection, in addition to advancing healthcare reform initiatives. Prior to joining MHA, Mr. Rueben served as President of the Maine Hospital Association, Senior Vice President of the Virginia Hospital and Healthcare Association, and Vice President for Diamond Healthcare Corporation in Virginia. Born and raised in Richmond, Virginia, he has a Bachelor's Degree from Virginia Commonwealth University School of Business, a Post-Graduate Certificate in Healthcare Financial Management from the University of South Carolina College of Business Administration, and also a Master's of Business Administration from South Carolina.

Andrew Schroeder, Ph.D., M.P.P., is the Director of Research and Analysis for Direct Relief. Starting in 2008 he built Direct Relief's program in GIS and spatial analytics for humanitarian medical assistance. Since then he has built numerous interactive mapping applications covering topics from the prevention of mother-to-child transmission of HIV, laboratory strengthening in east Africa, disaster response in Haiti, New York City, and the US Gulf Coast, and the implementation of the Affordable Care Act by primary care health clinics across the US. In 2013, he and Direct Relief were awarded the President's Award by Esri for outstanding achievements in GIS. He also plays a lead role in Direct Relief's publication of the annual State of the Safety Net report, which tracks key economic and epidemiological conditions among US safety net health providers. Dr. Schroeder received his Ph.D. from New York University's Department of Social and Cultural Analysis and his Masters of Public Policy from the Gerald R. Ford School of Public Policy at the University of Michigan, with a focus on science and technology policy.

Lisa Tofil, J.D., is a Partner in Holland & Knight's Public Policy & Regulation Group, where her practice is focused on federal relations and policy in healthcare, emergency medical services and transportation issues. She provides strategic planning, advocacy and legal assistance to clients on a broad range of legislative and regulatory matters. A member of the firm's Healthcare & Life Sciences Team, which is one of the largest and most sophisticated in the U.S., she has extensive experience

representing state and national healthcare organizations, individual hospital and health systems, and prior to joining the firm, served in several in-house hospital senior government relations and legal positions. Earlier in her career, Ms. Tofil spent several years handling health and income security issues in the United States Senate. On health policy matters, Ms. Tofil represents a number of healthcare organizations, including the areas of trauma centers and systems, air medical transport, the 340B Drug Discount Program, hospitals and health systems, and clinical laboratories. Ms. Tofil works with clients on policy development, devising legislative and regulatory strategies, and intervening as necessary to draft and secure legislative or regulatory changes that advance client interests. Ms. Tofil works regularly with key congressional healthcare committees and has a strong record of delivering results for clients. Ms. Tofil also has considerable background in obtaining improved federal funding for healthcare programs, capital projects and large cities, as well as enhanced reimbursement for healthcare entities. She possesses an in-depth knowledge of the Medicaid and Medicare programs and is accomplished in securing improved reimbursement through these programs and in developing innovative opportunities to enhance state and federal funding for healthcare providers. In addition to her healthcare expertise, Ms. Tofil provides counsel and federal representation on transportation issues, including regulation over air medical providers, as well as highway and transit funding. She represents a large city on appropriations and transit work, including negotiating a full funding grant agreement with the Federal Transit Administration. As a hospital attorney, Ms. Tofil has provided legal counsel on a range of issues, including the 340B Drug Discount Program, Fraud & Abuse, Stark I & II, EMTALA, tax exemption, corporate practice of medicine, guardianship, power of attorney and patient confidentiality. She has negotiated healthcare contracts and drafted hospital policies. Ms. Tofil spent several years on Capitol Hill as a healthcare legislative assistant to Senator John H. Chafee and served on the staff of the House Education and Labor Subcommittee on Labor Management.

Ani Turner, M.A., is Deputy Director of Altarum Institute's Center for Sustainable Health Spending, and leads the Center’s health workforce analysis and modeling and monthly tracking of national health sector employment. Working with government and commercial clients for over two decades, she has developed forecasting models and conducted

analyses of health care resources, costs, and quality for the Department of Health and Human Services, the Department of Defense (DoD), individual States, and private health plans. Ms. Turner led development of a system of models for the Health Resources and Services Administration, National Center for Health Workforce Analysis, to project supply and demand for physicians, physician assistants, and advanced practice nurses by specialty. She supported development of emergency preparedness health workforce data and planning tools for the State of Florida. In internally funded work, she developed a method to link the health workforce by occupation with national health expenditures, for which she received the National Association for Business Economics NABE Award for outstanding paper. For a decade, Ms. Turner led work for the DoD conducting economic analyses of hospital requirements and life-cycle costs in support of over a dozen multi-million dollar military medical construction decisions. She has played an active role in efforts to define Altarum Institute's internal research strategy, leading two task forces defining Altarum's vision for a transformed U.S. health system and potential focus areas for research. Ms. Turner's recent work has explored the business case for racial equity for the W.K. Kellogg Foundation, and assessments of the value of investments in primary prevention, with an emphasis on community-based interventions and the social determinants of health, for the Robert Wood Johnson Foundation. Ms. Turner holds a Bachelor's degree in mathematics, summa cum laude, Phi Beta Kappa, and a Master of Arts in Applied Economics, both from the University of Michigan.

Matthew Zavadsky, MS-HSA, EMT, is the Public Affairs Director at MedStar Mobile Healthcare, the exclusive emergency and non-emergency Emergency Medical Services provider for Fort Worth and 14 surrounding cities in North Texas. MedStar provides advanced life support ambulance service to 421 square miles and more than 880,000 residents and responds to over 112,000 emergency calls a year with a fleet of 54 ambulances. MedStar is a high performance Emergency Medical Services (HPEMS) system, providing advanced clinical care with high economic efficiency. He has guided the implementation of several innovative partnerships with healthcare partners that have brought MedStar fully into the healthcare system, including Community Health, CHF readmission reduction, observational admission reduction, hospice revocation avoidance and 9-1-1 nurse triage programs. Mr. Zavadsky is a frequent speaker at national conferences and has done

consulting in numerous EMS issues, specializing in high performance EMS system operations, public/media relations, public policy, health informatics, costing strategies and EMS research. Mr. Zavadsky is an Adjunct Faculty for the University of Central Florida's College of Health and Public Affairs teaching courses in Healthcare Economics and Policy, Healthcare Finance, Ethics, Managed Care and US Healthcare Systems. Mr. Zavadsky has 33 years' experience in EMS including volunteer, fire department, public and private sector EMS agencies. He is a former paramedic and has managed private sector ambulance services from 10,000 to more than 110,000 annual call volume in locations including Fairfield, Connecticut; Augusta, Georgia; Orlando, Florida and La Crosse, Wisconsin. He has also served as a regulator in Lincoln, Nebraska and Volusia County (Daytona Beach), Florida. He holds a Master's Degree in Health Service Administration with a Graduate Certificate in Health Care Data Management.

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Key Features of the *Affordable Care Act* By Year

(taken from http://www.hhs.gov/healthcare/facts/timeline/timeline-text.html)

On March 23, 2010, President Obama signed the Affordable Care Act. The law puts in place comprehensive health insurance reforms that will roll out over four years and beyond.

OVERVIEW OF THE HEALTH CARE LAW

2010: A new Patient's Bill of Rights goes into effect, protecting consumers from the worst abuses of the insurance industry. Cost-free preventive services begin for many Americans.

2011: People with Medicare can get key preventive services for free, and also receive a 50% discount on brand-name drugs in the Medicare "donut hole."

2012: Accountable Care Organizations and other programs help doctors and health care providers work together to deliver better care.

2013: Open enrollment in the Health Insurance Marketplace begins on October 1st.

2014: All Americans will have access to affordable health insurance options. The Marketplace allows individuals and small businesses to compare health plans on a level playing field. Middle-and low-income families will get tax credits that cover a significant portion of the cost of coverage. The Medicaid program will be expanded to cover more low-

income Americans. All together, these reforms mean that millions of people who were previously uninsured will gain coverage from the *Affordable Care Act*.

2010

NEW CONSUMER PROTECTIONS

- **Putting Information for Consumers Online.** The law provides for where consumers can compare health insurance coverage options and pick the coverage that works for them. *Effective July 1, 2010.*
- **Prohibiting Denying Coverage of Children Based on Pre-Existing Conditions.** The health care law includes new rules to prevent insurance companies from denying coverage to children under the age of 19 due to a pre-existing condition. *Effective for health plan years beginning on or after September 23, 2010, for new plans and existing group plans.*
- **Prohibiting Insurance Companies from Rescinding Coverage.** In the past, insurance companies could search for an error, or other technical mistake, on a customer's application and use this error to deny payment for services when he or she got sick. The health care law makes this illegal. After media reports cited incidents of breast cancer patients losing coverage, insurance companies agreed to end this practice immediately. *Effective for health plan years beginning on or after September 23, 2010.*
- **Eliminating Lifetime Limits on Insurance Coverage.** Under the law, insurance companies will be prohibited from imposing lifetime dollar limits on essential benefits, like hospital stays. *Effective for health plan years beginning on or after September 23, 2010.*
- **Regulating Annual Limits on Insurance Coverage.** Under the law, insurance companies' use of annual dollar limits on the amount of insurance coverage a patient may receive will be restricted for new plans in the individual market and all group plans. In 2014, the use of annual dollar limits on essential benefits like hospital stays will be banned for new plans in the individual market and all group plans. *Effective for health plan years beginning on or after September 23, 2010.*

- **Appealing Insurance Company Decisions.** The law provides consumers with a way to appeal coverage determinations or claims to their insurance company, and establishes an external review process. *Effective for new plans beginning on or after September 23, 2010.*
- **Establishing Consumer Assistance Programs in the States.** Under the law, states that apply receive federal grants to help set up or expand independent offices to help consumers navigate the private health insurance system. These programs help consumers file complaints and appeals; enroll in health coverage; and get educated about their rights and responsibilities in group health plans or individual health insurance policies. The programs will also collect data on the types of problems consumers have, and file reports with the U.S. Department of Health and Human Services to identify trouble spots that need further oversight. *Grants Awarded October 2010.*

IMPROVING QUALITY AND LOWERING COSTS

- **Providing Small Business Health Insurance Tax Credits.** Up to 4 million small businesses are eligible for tax credits to help them provide insurance benefits to their workers. The first phase of this provision provides a credit worth up to 35 percent of the employer's contribution to the employees' health insurance. Small non-profit organizations may receive up to a 25 percent credit. *Effective now.*
- **Offering Relief for 4 Million Seniors Who Hit the Medicare Prescription Drug "Donut Hole."** An estimated 4 million seniors will reach the gap in Medicare prescription drug coverage known as the "donut hole" this year. Each eligible senior will receive a one-time, tax free $250 rebate check. *First checks mailed in June 2010, and will continue monthly throughout 2010 as seniors hit the coverage gap.*
- **Providing Free Preventive Care.** All new plans must cover certain preventive services such as mammograms and colonoscopies without charging a deductible, co-pay, or coinsurance. *Effective for health plan years beginning on or after September 23, 2010.*

- **Preventing Disease and Illness.** A new $15 billion Prevention and Public Health Fund will invest in proven prevention and public health programs that can help keep Americans healthy – from smoking cessation to combating obesity. *Funding begins in 2010.*
- **Cracking Down on Health Care Fraud.** Current efforts to fight fraud have returned more than $2.5 billion to the Medicare Trust Fund in fiscal year 2009 alone. The new law invests new resources and requires new screening procedures for health care providers to boost these efforts and reduce fraud and waste in Medicare, Medicaid, and CHIP. *Many provisions effective now.*

INCREASING ACCESS TO AFFORDABLE CARE

- **Providing Access to Insurance for Uninsured Americans with Pre-Existing Conditions.** The Pre-Existing Condition Insurance Plan provides new coverage options to individuals who have been uninsured for at least 6 months because of a pre-existing condition. States have the option of running this program in their state. If a state chooses not to do so, a plan will be established by the Department of Health and Human Services in that state. *National program effective July 1, 2010.*
- **Extending Coverage for Young Adults.** Under the law, young adults will be allowed to stay on their parents' plan until they turn 26 years old (in the case of existing group health plans, this right does not apply if the young adult is offered insurance at work). Check with your insurance company or employer to see if you qualify. *Effective for health plan years beginning on or after September 23.*
- **Expanding Coverage for Early Retirees.** Too often, Americans who retire without employer-sponsored insurance and before they are eligible for Medicare see their life savings disappear because of high rates in the individual market. To preserve employer coverage for early retirees until more affordable coverage is available through the new Exchanges by 2014, the new law creates a $5 billion program to provide needed financial help for employment-based plans to continue to provide valuable coverage to people who retire between the ages of 55 and 65, as well as their spouses and dependents. *Applications for employers to*

participate in the program available June 1, 2010. For more information on the Early Retiree Reinsurance Program, visit www.ERRP.gov.

- **Rebuilding the Primary Care Workforce.** To strengthen the availability of primary care, there are new incentives in the law to expand the number of primary care doctors, nurses and physician assistants. These include funding for scholarships and loan repayments for primary care doctors and nurses working in underserved areas. Doctors and nurses receiving payments made under any state loan repayment or loan forgiveness program intended to increase the availability of health care services in underserved or health professional shortage areas will not have to pay taxes on those payments. *Effective 2010* .
- **Holding Insurance Companies Accountable for Unreasonable Rate Hikes**. The law allows states that have, or plan to implement, measures that require insurance companies to justify their premium increases to be eligible for $250 million in new grants. Insurance companies with excessive or unjustified premium exchanges may not be able to participate in the new health insurance Exchanges in 2014. *Grants awarded beginning in 2010.*
- **Allowing States to Cover More People on Medicaid.** States will be able to receive federal matching funds for covering some additional low-income individuals and families under Medicaid for whom federal funds were not previously available. This will make it easier for states that choose to do so to cover more of their residents. *Effective April 1, 2010.*
- **Increasing Payments for Rural Health Care Providers.** Today, 68 percent of medically underserved communities across the nation are in rural areas. These communities often have trouble attracting and retaining medical professionals. The law provides increased payment to rural health care providers to help them continue to serve their communities. *Effective 2010.*
- **Strengthening Community Health Centers.** The law includes new funding to support the construction of and expand services at community health centers, allowing these centers to serve some 20 million new patients across the country. *Effective 2010.*

2011

IMPROVING QUALITY AND LOWERING COSTS

- **Offering Prescription Drug Discounts.** Seniors who reach the coverage gap will receive a 50 percent discount when buying Medicare Part D covered brand-name prescription drugs. Over the next 10 years, seniors will receive additional savings on brand-name and generic drugs until the coverage gap is closed in 2020. *Effective January 1, 2011.*
- **Providing Free Preventive Care for Seniors.** The law provides certain free preventive services, such as annual wellness visits and personalized prevention plans for seniors on Medicare. *Effective January 1, 2011.*
- **Improving Health Care Quality and Efficiency.** The law establishes a new Center for Medicare & Medicaid Innovation that will begin testing new ways of delivering care to patients. These methods are expected to improve the quality of care, and reduce the rate of growth in health care costs for Medicare, Medicaid, and the Children's Health Insurance Program (CHIP). Additionally, by January 1, 2011, the U.S. Department of Health and Human Services (HHS) will submit a national strategy for quality improvement in health care, including by these programs. *Effective no later than January 1, 2011.*
- **Improving Care for Seniors After They Leave the Hospital.** The Community Care Transitions Program will help high-risk Medicare beneficiaries who are hospitalized avoid unnecessary readmissions by coordinating care and connecting patients to services in their communities. *Effective January 1, 2011.*
- **Introducing New Innovations to Bring Down Costs.** The Independent Payment Advisory Board will begin operations to develop and submit proposals to Congress and the President aimed at extending the life of the Medicare Trust Fund. The Board is expected to focus on ways to target waste in the system, and recommend ways to reduce costs, improve health outcomes for patients, and expand access to high-quality care. *Administrative funding becomes available October 1, 2011.*

INCREASING ACCESS TO AFFORDABLE CARE

- **Increasing Access to Services at Home and in the Community.** The Community First Choice Option allows states to offer

home and community-based services to disabled individuals through Medicaid rather than institutional care in nursing homes. *Effective beginning October 1, 2011*.

HOLDING INSURANCE COMPANIES ACCOUNTABLE

- **Bringing Down Health Care Premiums.** To ensure premium dollars are spent primarily on health care, the law generally requires that at least 85 percent of all premium dollars collected by insurance companies for large employer plans are spent on health care services and health care quality improvement. For plans sold to individuals and small employers, at least 80% of the premium must be spent on benefits and quality improvement. If insurance companies do not meet these goals because their administrative costs or profits are too high, they must provide rebates to consumers. *Effective January 1, 2011.*
- **Addressing Overpayments to Big Insurance Companies and Strengthening Medicare Advantage.** Today, Medicare pays Medicare Advantage insurance companies over $1,000 more per person on average than is spent per person in Traditional Medicare. This results in increased premiums for all Medicare beneficiaries, including the 77 percent of beneficiaries who are not currently enrolled in a Medicare Advantage plan. The law levels the playing field by gradually eliminating this discrepancy. People enrolled in a Medicare Advantage plan will still receive all guaranteed Medicare benefits, and the law provides bonus payments to Medicare Advantage plans that provide high-quality care. *Effective January 1, 2011.*

2012

IMPROVING QUALITY AND LOWERING COSTS

- **Linking Payment to Quality Outcomes.** The law establishes a hospital Value-Based Purchasing program (VBP) in Traditional Medicare. This program offers financial incentives to hospitals to improve the quality of care. Hospital performance is required to be publicly reported, beginning with measures relating to heart attacks, heart failure, pneumonia, surgical care, health-care asso-

ciated infections, and patients' perception of care. *Effective for payments for discharges occurring on or after October 1, 2012.*

- **Encouraging Integrated Health Systems.** The new law provides incentives for physicians to join together to form Accountable Care Organizations. These groups allow doctors to better coordinate patient care and improve the quality, help prevent disease and illness, and reduce unnecessary hospital admissions. If Accountable Care Organizations provide high quality care and reduce costs to the health care system, they can keep some of the money that they have helped save. *Effective January 1, 2012.*
- **Reducing Paperwork and Administrative Costs.** Health care remains one of the few industries that relies on paper records. The new law will institute a series of changes to standardize billing and requires health plans to begin adopting and implementing rules for the secure, confidential, electronic exchange of health information. Using electronic health records will reduce paperwork and administrative burdens, cut costs, reduce medical errors, and most importantly, improve the quality of care. *First regulation effective October 1, 2012.*
- **Understanding and Fighting Health Disparities.** To help understand and reduce persistent health disparities, the law requires any ongoing or new federal health program to collect and report racial, ethnic and language data. The Secretary of Health and Human Services will use these data to help identify and reduce disparities. *Effective March 2012.*

INCREASING ACCESS TO AFFORDABLE CARE

- **Providing New, Voluntary Options for Long-Term Care Insurance.** The law creates a voluntary long-term care insurance program – called CLASS -- to provide cash benefits to adults who become disabled. **Note: On October 14, 2011, Secretary Sebelius transmitted a report and letter to Congress stating that the Department does not see a viable path forward for CLASS implementation at this time.**

2013

IMPROVING QUALITY AND LOWERING COSTS

- **Improving Preventive Health Coverage.** To expand the number of Americans receiving preventive care, the law provides new funding to state Medicaid programs that choose to cover preventive services for patients at little or no cost. *Effective January 1, 2013.*
- **Expanding Authority to Bundle Payments.** The law establishes a national pilot program to encourage hospitals, doctors, and other providers to work together to improve the coordination and quality of patient care. Under payment "bundling," hospitals, doctors, and providers are paid a flat rate for an episode of care rather than the current fragmented system where each service or test or bundles of items or services are billed separately to Medicare. For example, instead of a surgical procedure generating multiple claims from multiple providers, the entire team is compensated with a "bundled" payment that provides incentives to deliver health care services more efficiently while maintaining or improving quality of care. It aligns the incentives of those delivering care, and savings are shared between providers and the Medicare program. *Effective no later than January 1, 2013.*

INCREASING ACCESS TO AFFORDABLE CARE

- **Increasing Medicaid Payments for Primary Care Doctors.** As Medicaid programs and providers prepare to cover more patients in 2014, the Act requires states to pay primary care physicians no less than 100 percent of Medicare payment rates in 2013 and 2014 for primary care services. The increase is fully funded by the federal government. *Effective January 1, 2013.*
- **Open Enrollment in the Health Insurance Marketplace Begins.** Individuals and small businesses can buy affordable and qualified health benefit plans in this new transparent and competitive insurance marketplace. *Effective October 1, 2013.*

2014

NEW CONSUMER PROTECTIONS

- **Prohibiting Discrimination Due to Pre-Existing Conditions or Gender.** The law implements strong reforms that prohibit insurance companies from refusing to sell coverage or renew policies because of an individual's pre-existing conditions. Also, in the individual and small-group market, the law eliminates the ability of insurance companies to charge higher rates due to gender or health status. *Effective January 1, 2014.*
- **Eliminating Annual Limits on Insurance Coverage**. The law prohibits new plans and existing group plans from imposing annual dollar limits on the amount of coverage an individual may receive. *Effective January 1, 2014.*
- **Ensuring Coverage for Individuals Participating in Clinical Trials.** Insurers will be prohibited from dropping or limiting coverage because an individual chooses to participate in a clinical trial. Applies to all clinical trials that treat cancer or other life-threatening diseases. *Effective January 1, 2014.*

IMPROVING QUALITY AND LOWERING COSTS

- **Making Care More Affordable.** Tax credits to make it easier for the middle class to afford insurance will become available for people with income between 100 percent and 400 percent of the poverty line who are not eligible for other affordable coverage. (In 2010, 400 percent of the poverty line comes out to about $43,000 for an individual or $88,000 for a family of four.) The tax credit is advanceable, so it can lower your premium payments each month, rather than making you wait for tax time. It's also refundable, so even moderate-income families can receive the full benefit of the credit. These individuals may also qualify for reduced cost sharing (copayments, co-insurance, and deductibles). *Effective January 1, 2014*.
- **Establishing the Health Insurance Marketplace.** Starting in 2014 if your employer doesn't offer insurance, you will be able to buy it directly in the Health Insurance Marketplace. Individuals and small businesses can buy affordable and qualified health benefit plans in this new transparent and competitive insurance marketplace. The Marketplace will offer you a choice of health plans that meet certain benefits and cost standards. Starting in

2014, Members of Congress will be getting their health care insurance through the Marketplace, and you will be able buy your insurance through the Marketplace, too.

- **Increasing the Small Business Tax Credit.** The law implements the second phase of the small business tax credit for qualified small businesses and small non-profit organizations. In this phase, the credit is up to 50 percent of the employer's contribution to provide health insurance for employees. There is also up to a 35 percent credit for small non-profit organizations. *Effective January 1, 2014.*

INCREASING ACCESS TO AFFORDABLE CARE

- **Increasing Access to Medicaid.** Americans who earn less than 133 percent of the poverty level (approximately $14,000 for an individual and $29,000 for a family of four) will be eligible to enroll in Medicaid. States will receive 100 percent federal funding for the first 3 years to support this expanded coverage, phasing to 90 percent federal funding in subsequent years. *Effective January 1, 2014.*
- **Promoting Individual Responsibility.** Under the law, most individuals who can afford it will be required to obtain basic health insurance coverage or pay a fee to help offset the costs of caring for uninsured Americans. If affordable coverage is not available to an individual, he or she will be eligible for an exemption. *Effective January 1, 2014.*

2015

IMPROVING QUALITY AND LOWERING COSTS

- **Paying Physicians Based on Value, Not Volume.** A new provision will tie physician payments to the quality of care they provide. Physicians will see their payments modified so that those who provide higher value care will receive higher payments than those who provide lower quality care. *Effective January 1, 2015.*

HHS will not enforce these rules against issuers of stand-alone retiree-only plans in the private health insurance market.