FEDERAL HEALTH IT STRATEGIC PLAN

2015 – 2020

Prepared by:

The Office of the National Coordinator for Health Information Technology (ONC)
Office of the Secretary, United States Department of Health and Human Services
http://healthit.gov

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LETTER FROM THE NATIONAL COORDINATOR

Over the past five years, our nation's health information technology (health IT) landscape has experienced a remarkable transformation. Developing the *Federal Health IT Strategic Plan 2015-2020* (Plan) has given us a chance to reflect on our collective health IT journey. When we released the prior Plan in 2011, non-federal adoption of health IT was in its nascent stages, Affordable Care Act implementation was commencing, and the use of mobile health applications, especially by consumers, was far from ubiquitous.

Implementation of the prior Plan created a strong foundation for achieving this Plan's goals and objectives. Over 450,000 eligible professionals and 4,800 eligible hospitals received an incentive payment for participation in the Medicare and Medicaid Electronic Health Record (EHR) Incentive Programs. This incredible achievement was not easy. Hospitals and health care providers have invested capital, time, and hard work to convert their patient medical records from paper systems to EHRs, and to adapt workflow and culture to deliver care in this electronic environment. This has created a strong demand for the seamless sharing of information across technology systems, information platforms, location, provider, or other boundaries.

This Plan aims to remain flexible to evolving definitions of health, health care, and the technology developments that support them. We recognize that both clinical health care and other sources will generate valuable health information. Expectations for our information systems and for their users will increase. During the past decade's information age, innovation and technological advancements have been difficult to predict. This Plan accounts for how the federal government views our nation's current health IT landscape and articulates federal values and priorities and it also identifies government actions that we believe will be most impactful as we look to the future.

I am incredibly grateful for the participation of over thirty-five federal entities that worked in concert to develop this Plan. They demonstrate the extensive interest across the government to digitize the health experience for all individuals and facilitate the progress towards a learning health system that can improve health and care. I also especially appreciate the Health IT Policy Committee for providing us with recommendations that informed this final Plan, and to the hundreds of individuals and diverse stakeholders that offered input during our public comment period. The strong public interest validates the critical importance of our mission.

With this Plan, the federal government signals that, while we will continue to work towards widespread use of all forms of health IT, efforts will begin to include new sources of information and ways to disseminate knowledge quickly, securely, and efficiently. This Plan will help guide the nation's shift towards focusing on better health and delivery system reform. Federal authorities and investments will seek to implement this Plan's strategies. However, this is a shared undertaking. Efforts of state, territorial, local, and tribal governments, and of private stakeholders are vital to ensure that health information is available when and where it matters most to improve and protect people's health and well-being.

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EXECUTIVE SUMMARY

THE ONLY WAY FOR HEALTH IT TO ACHIEVE ITS FULL POTENTIAL, IS WHEN IT UNOBTRUSIVELY SUPPORTS INDIVIDUALS AS THEY STRIVE TO REACH THEIR FULL POTENTIAL FOR HEALTH.

The *Federal Health IT Strategic Plan 2015-2020* (Plan) explains how the federal government intends to apply the effective use of information[1] and technology to help the nation achieve high-quality care, lower costs, a healthy population, and engaged individuals. This Plan focuses on advancing health information technology (health IT) innovation and use for a variety of purposes; however, the use of health IT is not in itself an end goal. The work described in this Plan aims to modernize the U.S. health IT infrastructure so that individuals, their providers, and communities can use it to help achieve health and wellness goals. The infrastructure should support dynamic uses of electronic information: uses that facilitate and expedite the transformation of data to information, information to knowledge, and knowledge to informed action. Successful development and implementation of this infrastructure will fortify the cultural shifts necessary to strengthen the collaborative relationships for improving health, health care, research, and innovation.

Evolution in Federal Strategy

Federal agencies are purchasers, regulators, developers, and users of health IT. In their various roles, they set policy and insure, pay for care, or provide direct patient care for tens of millions of Americans. They also protect and promote population and community health by investing in health and human services and in infrastructure. Additionally, federal agencies develop and implement policies and regulations to advance innovation, support research, promote competition, and protect individual and community safety, privacy, and security.

The federal strategy for health IT has evolved. Through implementation of the Health Information Technology for Economic and Clinical Health (HITECH) Act of 2009, as well as long-term development and use of electronic health systems by Department of Defense and Department of Veterans Affairs, the federal government invested heavily in health IT adoption and electronic information. Efforts primarily concentrated on EHR adoption and foundational work to expand health information exchange. The successes of these initial efforts resulted in the accelerated maturation of the health IT market towards the widespread use of health IT and information exchange. This led to a clearer federal understanding of marketplace strengths and weaknesses, and of the particular needs and interests of individuals and communities. These lessons demonstrated a need within federal entities, whose policies and programs impact the health IT ecosystem, for a more integrated planning approach. Federal plans now benefit from engagement and coordination by a wider spectrum of government agencies and private sector stakeholders, a continual evaluation of areas that would require new policy or oversight considerations, and of those areas, where greater collaboration with the private sector would be advantageous. Substantial gains in EHR adoption, consumer technology innovation, and information demands across the care continuum helped inform the updated federal health IT approach.

This approach aims to provide clarity in federal policies, programs, and actions. It includes strategies to align program requirements, harmonize and simplify regulations, and aims to help health IT users to

advance the learning health system to achieve better health. As federal agencies implement the Plan's strategies and assess their effectiveness, they will strive towards flexibility. The Plan's partners will collaborate with one another, monitor market impact, and assess how their actions are working to accommodate and guide the evolution of health IT. This flexibility centers on a constant aim that federal actions lead towards promoting trustworthy, accessible, and readily available information and technology that helps individuals across the nation achieve their full health potential.

Plan's Framework

The Plan includes four overarching goals. These goals and their respective objectives and strategies should not be viewed as sequential, but as interdependent with a collective purpose of improving the health and well-being of individuals and communities.

The Plan identifies the federal government's health IT priorities. While this Plan focuses on federal strategies, achieving this Plan's vision requires collaboration from private stakeholders and state, territorial, local, and tribal governments. Efforts across the ecosystem - by individuals, families, caregivers, health care entities and providers, public health entities, payers, technology developers, community-based nonprofit organizations, home-based supports, and academic institutions - are also essential. Government action will be the main driver for certain strategies, and for others, federal action will either supplement existing stakeholder work or encourage additional activities to begin. The vision and goals articulated in this Plan are not exclusive to the federal government; their attainment will require collaborative engagement and commitment. The Plan seeks to illuminate issues where federal action will have less reach, and where state, territorial, regional, private, and individual actions will be more impactful.

Although this Plan has a broad scope, its implementation has a singular focus: improving the health and well-being of this nation through a resilient health IT infrastructure. Many strategies included in this Plan necessitate broad cultural changes. This Plan takes a holistic and long-range view of how the health IT infrastructure should evolve to advance person-centered health and wellness. Federal agencies will follow the Federal Health IT Principles described below during Plan implementation. This Plan pursues a flexible, dynamic approach, and the federal government will make necessary adjustments if needed. Achieving the Plan's vision will require collective responsibility and prioritization, and the federal government will continue to engage with all interested stakeholders to ensure that people, organizations, and communities can best take advantage of electronic health information and the health IT infrastructure.

FEDERAL HEALTH IT VISION AND MISSION

Vision

High-quality care, lower costs, healthy population and engaged people

Mission

Improve the health and well-being of individuals and communities through the use of technology and health information that is accessible when and where it matters most

FEDERAL HEALTH IT PRINCIPLES

Federal agencies will collaborate with one another and with state, territorial, local, tribal, and private stakeholders to:

- **Focus on value.** Federal health IT policy will continuously target solutions that improve health and care quality, efficiency, safety, affordability, equity, effectiveness, and access.
- **Be person-centered.** Federal policies and activities support the accessibility and use of electronic health information by individuals, caregivers, providers, and researchers across products and organizations, in a timely and reliable way that protects personal privacy and upholds individual autonomy.
- **Respect individual preferences.** Person-centered care embraces the values of the individual inside and outside the health system, where all entities honor individuals' personal health goals, needs, values, culture, and choices regarding their information, health, and care.
- **Build a culture of electronic health information access and use.** Federal actions will help establish an environment where secure universal health information exchange and use are expected and accepted so that everyone benefits from simple, timely, equitable, efficient, and appropriate electronic access to and sharing of health information.
- **Create an environment of continuous learning and improvement.** Federal policies and actions seek to strengthen feedback loops between scientific and health care communities to translate evidence into clinical practice and other settings, and learn how to perform better.
- **Encourage innovation and competition.** The government's policies, guidance, and programs will support continued innovation and competition in the health IT marketplace to foster highly useful health IT solutions that lead to better health and care.
- **Be a responsible steward of the country's money and trust.** The government seeks to use its resources judiciously. This means relying to the extent possible on private markets to accomplish important societal objectives, and acting to correct market failures when necessary. It also means developing health IT policies through open, transparent, and accountable processes.

FEDERAL HEALTH IT GOALS

Goal 1: Advance Person-Centered and Self-Managed Health

- **Objective A:** Empower individual, family, and caregiver health management and engagement
- **Objective B:** Foster individual, provider, and community partnerships

Goal 2: Transform Health Care Delivery and Community Health

- **Objective A:** Improve health care quality, access, and experience through safe, timely, effective, efficient, equitable, and person-centered care
- **Objective B:** Support the delivery of high-value health care
- **Objective C:** Protect and promote public health and healthy, resilient communities

Goal 3: Foster Research, Scientific Knowledge, and Innovation

- **Objective A:** Increase access to and usability of high-quality electronic health information and services
- **Objective B:** Accelerate the development and commercialization of innovative technologies and solutions
- **Objective C:** Invest, disseminate, and translate research on how health IT can improve health and care delivery

Goal 4: Enhance Nation's Health IT Infrastructure

- **Objective A:** Finalize and implement the Nationwide Interoperability Roadmap
- **Objective B:** Protect the privacy and security of health information
- **Objective C:** Identify, prioritize, and advance technical standards to support secure and interoperable health information and health IT
- **Objective D:** Increase user and market confidence in the safety and safe use of health IT products, systems, and services
- **Objective E:** Advance a national communications infrastructure that supports health, safety, and care delivery

INTRODUCTION

Modernizing and redesigning the U.S. health and wellness information, communications, and technology infrastructure is vital for advancing the health and well-being of individuals and communities across the nation. In today's connected society, a variety of sources, platforms, and settings generate electronic health information that can inform health goals, behaviors, and decisions. These information sources extend well beyond traditional health care services to create a more expansive, continual pool of salient information. These sources and information types include self-generated information collected through an individual's mobile device, and non-clinical information collected by communities, including air and water quality from work and physical environments, potential toxin exposure, and availability of transportation and social services. To unlock the full power of information to improve individual health and well-being, essential electronic health information must be available when and where it matters most.

Improving the secure availability and use of pertinent health information allows individuals to take ownership of their health, partner with their health care providers and others on care preferences and decisions, and reach their health and quality of life goals. It bolsters the delivery of health care and long-term services and supports, allows communities to reduce health disparities, and improves public health agencies' ability to detect, track, manage, and prevent illness outbreaks and individual harm. Information also fuels research and innovation, spurring advancements in scientific discovery. As the information and technology demands continue to evolve, opportunities for the federal government exist to create pathways for the private sector to innovate and to design programs and policies that do not impede the marketplace's progress. It is imperative for government to address this new electronic health information and health IT paradigm to improve the health of the nation.

IMPROVING HEALTH AND WELL-BEING

Empowering individuals to make healthy choices can improve their quality and longevity of life. Information is central to setting and accomplishing individual and systemic goals and improvement plans; however, information alone – even when electronically generated and shared – cannot improve the nation's health. It will take the collective efforts of many stakeholders using electronic health information in meaningful and effective ways, alone and in partnership with one another, to help achieve the nation's full health potential.

An individual can take many steps to improve his or her health, including lifestyle and wellness choices, actively managing his or her health care, and receiving necessary immunizations, preventive care, and long-term services and supports. Engaged individuals are more likely to be proactive in practicing wellness, prevention, and disease management behaviors.[2] However, health care providers and health insurers offered fewer than three in ten individuals electronic or online access to their medical record in 2013.[3]

Individuals and caregivers often want to increase their care engagement and health management, but many challenges and deficiencies make it difficult for them to play a proactive role and respond to the information and resources available to them. Many providers are also struggling to engage effectively

with their patients and determine what, and how much, information would be beneficial, and how best to establish processes, tools, and methods to facilitate this engagement as mutually supportive partners. For example, health care providers sometimes find it difficult to build and maintain partnerships with their patients and their caregivers due to cost pressures, lack of pertinent patient information, time limitations, cultural differences, communication and language barriers, and dissatisfaction with the usability of their technology systems. High-participation partnerships may require real sacrifices from providers that can decrease productivity and reimbursement.

In turn, these partnerships require patients to be engaged and active in their own health and health care - an effort that takes time and resources that patients and their caregivers may not necessarily be able to commit - even when they understand the value it could provide. Individuals and their caregivers often seek care from multiple providers who have incomplete access to essential information about that person and limited financial incentives to coordinate care carefully. Individuals and caregivers often serve as care coordinators and information transporters, and frequently select providers based on limited knowledge of the care quality they offer. In the current fee-for-service payment environment, providers are reimbursed for each service provided rather than by the quality or value of care and its outcome. This focus on individual patient encounters may not motivate providers to seek additional information from outside sources, including individuals' non-clinical quality of life information. Partnering with individuals can help providers make decisions to better coordinate the patient's care, emphasize care quality, and accommodate patient preferences.

Better health and more personally meaningful health and care plans will further require recognition that individual well-being is impacted by many factors outside of traditional health care. Many health and social determinants outside of care delivery influence individuals' health and well-being, and the federal government can play an important role to guide the inclusion of these determinants into the electronic information stream for decision-making by individuals, providers, and communities, as well as the organizations and technology developers that support them. For example, economic, social, and physical environments have an extensive effect on an individual's health. Some individuals live in communities where healthy food is hard to find, air quality is poor, and access to affordable and quality health care, transportation, and social services are limited. Communities have a responsibility to help individuals lead healthy and productive lives, and protect them from harm. Home- and community-based organizations, as well as social and human service organizations can play an integral role in assisting individuals to achieve their health potential. Many individuals, however, do not receive the services they need or qualify for due to systemic deficits in communication and information systems between the health care community and social services community.

Integrating primary health care services and public health efforts, including linking to community prevention services, can promote efficiency, positively affect individual wellness, and improve population health. The Affordable Care Act of 2010 provides a unique opportunity to maximize the value of health investments by integrating population health approaches and health care service delivery. Together with other strategic initiatives, health IT can facilitate improved public health surveillance, collect more complete and accurate data, and link clinical care and supportive community-based services and policies. Applying innovative health IT in these efforts will improve the ability to reach high-risk populations and support the delivery of comprehensive, culturally and linguistically appropriate, and easily navigated services.

Public health entities also have a crucial role in keeping individuals and communities safe and healthy. Too often, there is asymmetry between the information public health entities have access to and the information required for conducting real-time public health surveillance, for developing comprehensive situational awareness, and for informing the allocation of limited resources. There is also a shortage of public health workers with the technological and data analytics skills necessary to analyze complex information from multiple and disparate sources, to inform strategic decision-making, and to apply health IT and clinical information to community needs assessments and other responsibilities.

Providers and researchers share a goal of having high quality, reliable data that is useful across organizations and databases. Currently, data quality and reliability are highly variable and could be enriched to enhance its use for research and to improve care. A focus on continuous quality improvement, for both the data and application tools, is necessary to enhance the existing and emergent data for routine use for many purposes, including improved care or research. An approach that embraces federal and private sector collaboration to determine how to improve data quality and utility for various health and research needs can help the learning health system fully integrate continuous quality improvement.

❖ Alignment with Complementary Strategic Plans & Initiatives

Although this Plan focuses on how the federal government will foster an interoperable[4] electronic health IT infrastructure to support the nation's efforts to achieve high-quality care, lower costs, and healthier and engaged people, the Plan aligns closely with other federal-directed plans that address health and social determinants that information and technology alone cannot solve. A list of many complementary plans and initiatives are included at the end of the document. The Plan purposefully includes interrelated strategies and objectives where health IT can help accomplish the vision of national goals highlighted in those plans and initiatives. These plans focus on health, quality, safety, prevention, health disparities, health literacy, interoperability, infrastructure, and security. Additionally, this Plan aligns with key initiatives that seek to advance a connected health IT infrastructure, or initiatives that require a strong health IT infrastructure to succeed. This Plan includes brief synopses of priority federal initiatives that include health IT as a component critical to their success. Future Plan progress reporting activities will assess how health IT has assisted in advancing these initiatives' goals.

The graphic below highlights primary accomplishments and results, tied to existing national priorities, which the U.S. health IT infrastructure should work to support. To be most effective, the health IT infrastructure also needs to support the specific goals of communities, providers, and individuals. For example, if a provider has the goal of improving medication adherence among her diabetic patients with hypertension, then health IT should support her ability to pull a report to identify patients who have not filled their prescriptions. Further, health IT can present information that signals whether certain individuals may have trouble paying for their medications, getting to the pharmacy, or are showing cognitive declines. If an individual sets a goal to lose weight, health IT solutions should assist with goal attainment by allowing him to monitor his daily steps and calorie consumption, and provide community resources to connect with nutritionists or wellness activities nearby.

Figure 1. The vision and expected results that guide the Federal Health IT Strategic Plan 2015-2020

PROGRESSING TO A PERSON-CENTERED INFRASTRUCTURE

Evidence suggests that health care delivery systems account for only about 10–20 percent of health outcomes.[5] On a daily basis, most individuals do not encounter the health care delivery system even when managing their health and care. When individuals interact with the delivery system, they are often more a recipient of health care and long-term services and supports, than informed, active partners who collaboratively make decisions with their comprehensive care team. This dynamic limits the opportunities for individuals to manage their own health and to share in health care decisions.

A more person-centered vision is vital to improving health and health care, particularly since individuals' motivations and actions have a great impact on health behaviors and outcomes. A person-centered health system enables individuals to access wellness and health care services and information, enabled by user-centered technology that reflects their needs, values, and choices, and supports both self-care and meaningful interactions with their care providers with seamless transitions between these activities. In a person-centered model, the boundaries become more porous between what occurs inside and outside of the health care system, by promoting increased information flow and using technology that allows remote

interactions independent of physical location and time constraints. Individuals perform on their own some of the activities that traditionally occur only in formal health care settings (*e.g.,* monitoring blood pressure, tracking body mass index). An increasing number of individuals want the ability to use technology to track and improve upon their health goals, and want technology to be helpful and easy to use. Market innovations and policies that allow individuals to move and combine information from various sources – whether that information is stored in mobile applications, EHRs, or patient portals, into a single information source to improve health and wellness management – will greatly expand individuals' capability to engage in self-management and contribute to improvements in health care, research, and technology innovation.

Empowering and supporting individuals and their families and caregivers to manage their health and partner in their care can be a complex and time-consuming undertaking. Relationships and cultural expectations among providers and individuals will evolve as each learn and practice new ways to communicate, collaborate, assume changing roles as part of the care team, understand new responsibilities, and discover how best to take advantage of improved health IT and care options.

It will take the collective work of individuals, providers, and community organizations to build and maintain meaningful partnerships to improve health. Federal health IT strategies can help support this endeavor. Many individuals are ready and eager to use highly advanced technologies and interact regularly with providers and others to accomplish their health goals. The federal government has a dual responsibility to ensure that momentum supports this empowerment, and does not leave others behind, which could expand existing inequalities and resource scarcities. Collaboratively, stakeholders should follow practices supported by federal actions to prevent widening potential "digital divides" of health IT development, availability and adoption that could result in exacerbated socioeconomic challenges. Shared efforts among public and private entities should create an environment that fosters the availability of culturally, linguistically, and technically appropriate tools and materials, reflecting diverse preferences that can help advance individuals' ability to manage their health and partner in their care. As the capacity for health IT tools and electronic health information grows and becomes more commonplace, a concerted effort by government and private entities should ensure technology is designed for all usability levels, fully accessible to individuals with disabilities or other potential limitations.

For the health system to evolve its attention and actions towards stronger relationships that rely on technology to facilitate information exchange and use, the person-centered actions will require more than the critical step of welcoming individuals' health decision-making and self-management. Stakeholders and federal government polices need to reflect evolving expectations and effectively manage risks to meet new demands by information users for nimble technology and expanded information sources. In this way, the health IT infrastructure can support individualized care, independent health decisions, and improvements to population and public health. The federal government's role in this evolution anticipates implementing policies to integrate and sustain new approaches to health and social services and supports, approaches that are reinforced by alternative reimbursement models supporting better outcomes, wellness, and prevention. This person-centered infrastructure will require culture shifts and technological adaptations that strengthen and make clear the connection between health care providers and community supports and services.

A key foundation of a person-centered infrastructure is a strong trust environment, where individuals, and those acting on their behalf, contribute information with a clear understanding of the risks and rewards associated with sharing information. A strong trust environment will stimulate opportunities for individuals and their caregivers to define and update their preferences and values. Individuals require confidence that custodians of their health information take every necessary measure to keep their information appropriately private and secure. At the same time, individuals expect that health information about them will be available for their care when and where they need it, and they will derive benefits from the information shared.

In a person-centered infrastructure, the term "health IT" includes a wide range of continually emergent products, technologies, and services, including but not limited to modular EHRs, mobile and telehealth technology, cloud-based services, medical devices, integrated remote monitoring and virtual visits, risk-modeling and other predictive algorithms, assistive technologies, application program interfaces, and sensors. Health IT encompasses technologies that researchers can use for biomedical analysis, and tools and computational power for analyzing large and complex datasets.

HEALTH IT HELPS USERS MANAGE SYSTEMIC TRANSFORMATION

Health IT is foundational to achieve a learning health system. The Institute of Medicine describes a learning health system as "one in which science, informatics, incentives, and culture are aligned for continuous improvement and innovation, with best practices seamlessly embedded in the care process, patients and families active participants in all elements, and new knowledge captured as an integral by-product of the care experience."[6] The speed with which we achieve a learning health system depends on relationships among all stakeholders, behavior and culture change among individuals, providers, and others, enhanced technology usability, redesigned workflows, and new models for accessing, contributing, sharing, and transforming information into actionable intelligence. Health IT can support and assist in applying the lessons and improvements discovered through the learning health system to achieve individual, local, and national health and wellness improvements.

❖ Current Health IT Landscape

Hospitals and physician offices across the nation have made great efforts in transitioning from paper to electronic systems and processes since the federal government released its prior health IT strategy in 2011. This has resulted in remarkable growth in health IT adoption and use among these provider types.[7,8] Additionally, hospitals across the country have achieved striking increases in electronic health information exchange.[9] However, many barriers still exist for the U.S. to realize the benefits of ubiquitous health IT use and widespread interoperable exchange of relevant, timely individual information across the care continuum. Lack of steady and consistent access to advanced broadband internet services can be one barrier for the health system to function properly. A health system where only some providers have health IT systems that provide them and their patients with access to consistently available and advanced broadband internet connections can lead to care gaps with consequences for patients that can be both burdensome and dangerous, such as medication errors or unavailable imaging studies. It can also lead to a misuse of resources among providers and public health entities.

A fully functional U.S. health system must be a technologically and culturally connected enterprise that facilitates the easy electronic movement of information. A solid health IT infrastructure will help to accelerate the interpersonal connections between each participant, and the information that moves between them. Health IT availability and use among providers that were not eligible for the Medicare and Medicaid EHR Incentive Programs lags behind those providers that were eligible for the programs. These providers, including behavioral health, emergency medical services (EMS), long-term and post-acute care, play an integral role in helping to keep individuals healthy and have numerous situations that necessitate collaboration and sharing of information with the greater health community. Often individuals who receive services and care from these providers are among the most vulnerable, and the rich information available from these providers can have significant impacts on individuals' health and their care decisions with others in the health enterprise.

For example, EMS practitioners provide stabilizing care and transportation services; having access to a patient's salient clinical information as a first responder can improve patient health and safety. Access to linked outcomes data from hospitals can help EMS systems measure performance, improve their provision of care, and provide timely feedback to providers. Behavioral health, long-term and post-acute care settings require access to a patient's information to ensure continuity in care services and prevent adverse events, such as medication allergies or errors, from occurring. Public health entities and clinical settings need bi-directional interfaces. These will enable unencumbered provider reporting to public health entities and allow seamless feedback and decision support from public health to clinical providers relevant to chronic health and emergent threats.

Improving the information flow will require improvements to health IT usability. Stakeholders have reported that many physicians find that current health IT systems are cumbersome, disruptive to workflow, decrease their efficiency, sometimes jeopardize patient safety, and have limited interoperability.[10] Claimed barriers to interoperability include the use of different technical standards, lack of business incentives that can lead vendors and providers to block the transmission of health information to other vendors and providers,[11] deficits in trust, and differences in state laws and regulations that make it difficult to share health information across state lines. The federal government seeks to work with stakeholders to pursue methods that improve health IT usability and reduce unnecessary impediments to information flow so that technology, policy, and business practices can effectively support health transformation.

❖ Infrastructure to Support Person-Centeredness

The movement toward person-centered health creates new demands on individuals, providers, community organizations, and on the health information and technology infrastructure. Existing and emerging technologies provide a path to make information and resources for health and health care management universal, integrated, equitable, accessible to all, and personally relevant. Health IT can help empower individuals, their families, and other caregivers to learn and communicate easily, engage in shared decision-making with their providers on their wellness and health goals, and manage their health in convenient and meaningful ways, resulting in better individual outcomes. However, only one in eight Americans track a health metric like blood pressure or weight using some form of electronic technology. Federal agencies seek to expand the ability of individuals to contribute electronic health information that

is personally relevant and usable to their care providers so that both can use it effectively in health planning.

In addition to changed actions and behaviors prompted by information and technology use, shared decision-making will elevate individuals' role as they partner in their care. To help individuals understand information more readily, an opportunity exists for technology and training to improve data visualization, which can lead to improved decision-making for both individuals and providers. This will benefit the design of effective decision support systems that improve shared decision-making and outcomes. Innovations that improve data presentation, through visual graphics and applications, can assist individuals with disabilities and help address the health and health IT literacy issues for diverse individual and caregiver populations.

Blue Button Initiative

Blue Button lets individuals go online and download their health records for improving health and facilitating greater access and control over personal health information. With origins in the Department of Veterans Affairs, the Blue Button initiative quickly expanded beyond the public sector. This effort encompasses more than 650 public and private organizations that have pledged to empower all individuals with electronic access to their health information, supported by outreach and education. Through standards, education, and outreach, this initiative has increased consumers' access to their health information from a variety of sources, including providers, health plans, laboratories, and pharmacies.

Well-designed health IT can propel a health care system based on trust, value, and quality improvement. Electronic health information and health IT can support care models that are best suited to complement and uphold individuals' choices and needs as they establish and achieve their health goals. Further, knowledge of how providers use information and technology and engage their patients with it will guide individuals to select high-quality providers that can support their health goals and improve overall health equity. Empowering individuals as valued care partners will shift what providers currently document and measure in their continuous quality improvement processes; this will entail moving beyond measuring patient experience and clinical processes, and driving towards more measures and emphasis on outcomes that matter similarly to individuals and providers. Federal actions within this Plan aim to support the shift toward monitoring and improving the performance of a national health information infrastructure to support this person-centered vision.

Visit Page 34 to view strategies

❖ Infrastructure to Support Care Delivery

Increasing use of health IT will help the nation achieve important health outcomes, including aiding in the prevention of chronic and debilitating disease, ensuring accessible and equitable care, making care safer and more person-centered, and advancing a culture of continuous quality improvement. Health IT will also play a crucial role in supporting alternative care models that are person-centered and value-driven. Seamless interoperability will facilitate better tracking of outcomes meaningful to providers and individuals, efficient resource use and cost analyses, particularly for care provided across multiple systems and settings.

The federal government plays a key role in care delivery, providing direct care and contracting to provide care in the private sector. The federal government is the nation's largest provider and payer of care. Department of Defense (DoD), Department of Veteran's Affairs (VA), Indian Health Services (IHS), and the Department of Justice's Bureau of Prisons (BOP) deliver direct patient care to tens of millions of individuals. The Health Resources and Services Administration (HRSA)-funded health centers provide quality-focused, comprehensive and preventative care in the nation's underserved communities to over 21 million individuals. The Centers for Medicare & Medicaid Services (CMS) is the largest purchaser of health care in the United States, as its programs pay almost one third of the nation's health expenditures. Through Medicare, Medicaid, and the Children's Health Insurance Program, CMS programs cover roughly 126 million beneficiaries. These federal health systems and payers must coordinate with providers both inside and outside the federal health sector.

Commercial payers often look toward federal programs as they develop their own models, thus expanding federal influence beyond its public care role. The Office of Personnel Management (OPM) contracts with commercial payers to provide care options for federal employees, and can require plans to include provider requirements and certain benefit structures for individuals. In similar ways, many companies in the private sector self-insure and can design plans that mirror federal alternative payment models to improve care. Through these roles, government policy and delivery practices can result in a collective effort that can establish best practices and a more uniform approach to using health IT and shared information to provide high-quality, well-coordinated care.

Delivery System Transformation

HHS Secretary Sylvia Burwell announced measurable goals and a timeline to move the Medicare program, and the health care system at large, toward paying providers based on the quality, rather than the quantity, of care they give patients. A key goal of this initiative is to have 85% of all Medicare fee-for-service payments tied to quality or value by 2016, and 90% by 2018.

Another key target is to have 30% of Medicare payments tied to alternative payment models by the end of 2018 and 50% of payments by the end of 2016.

The health IT infrastructure will need to enable the expansion of successful alternative payment models in a way that supports providers' ability to deliver high quality care to all their patients while reducing overall costs. Supportive health IT resources may include all-payer claims databases, registries, EHRs, health information exchanges, federal claims systems, and other data sources.

Systems, processes, and tools supported by health IT and health IT infrastructure can simplify and expedite care transformation. Building on efforts and tools initiated by the Affordable Care Act, HHS is augmenting reform in three important and interdependent ways to transform the health system. This transformed system will use incentives to motivate higher-value care by increasingly tying payment to value through alternative payment models; it will change how care is delivered by requiring greater teamwork and integration, more effective coordination of providers across settings, and greater attention by providers to population health; and it will harness the power of information to improve care for patients.[12] Furthermore, the increased number of individuals now covered by new insurance options has expanded the need to coordinate their services and for providers and communities to manage populations more efficiently. A solid health IT infrastructure will facilitate this coordination and population management.

The Medicare Access and Children's Health Insurance Program Reauthorization Act of 2015 (MACRA) requires the government to design programs that strongly emphasize high-value health care and unimpeded health information exchange. MACRA implementation will increase the widespread interest and business support for coordinating care, shifting care delivery and reimbursement from fee-for-service to value-based care. This will expedite the necessity and increased desire for better information and related management and decision systems. High-quality, accurate, and relevant electronic health information improves the ability of providers to manage and advance population health. Interoperable electronic health information provides a foundation to measure, report, and provide feedback on care quality for a number of public-facing and internal purposes.

Expanded use of health IT that combines beneficial decision supports and appropriate quality measures will help the nation to achieve continuous quality improvement and important health outcomes. For example, these efforts will help support clinicians in practice transformation efforts by making essential electronic health information readily available for care decisions and patient health management. The health IT infrastructure should support the creation and integration of evidence-based tools, persuasive health care provider incentives, alignment of payment and performance reforms that reward coordinated care, and augment an emphasis on achieving improved health and care among all individuals.

Health IT can also enhance routine medical care by delivering quality improvement services and prompts that are relevant to the providers' areas of expertise and specialty, reminding providers about the timing of appropriate preventive services for their patient's general well-being, and helping to efficiently coordinate care among providers. Providers can also use health IT to monitor and interact with their patients to track progress and outcomes. The market has already developed dynamic tools and delivery methods that are revolutionizing care delivery and individual self-management. Federal programs and policies aim to create an adaptive environment that stimulates market innovations that advance these transformational activities, while trying to prevent additional health and technical disparities.

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❖ Infrastructure to Support Community Health

Having complete information about a person is critical to achieving population health goals, as comprehensive information helps providers easily identify and close care gaps, recognize and analyze patterns and anomalies, and perform localized research and engage in quality improvement initiatives. This requires health IT capable of receiving and integrating individual electronic health information from multiple sources to enable providers to aggregate and track information over time within and across groups. Collectively, these efforts can assist providers to improve their patient panels' health, and when this information is shared and pooled with other information sources, it can contribute to broader knowledge advancements at the local, regional, and national level.

Equally important as technological advances, improved care in settings such as home- and community-based organizations can augment an individual's care experience. Health IT can help connect individuals with community resources and behavioral, preventive, and social services to support their goals, their health and wellness, and improve their quality of life. A comprehensive health IT infrastructure can connect care for individuals who access services often considered at the periphery of traditional care delivery, including public health, and community-based organizations, such as hospice care, Medicaid managed care delivery systems, schools, and the criminal justice system. Each service provider has specific coordination needs and information uses that can be best served by native IT systems that integrate with the health care system when necessary to exchange information.

Technological tools, practices, and policies that are tested and distributed within the greater health infrastructure will establish methods to incorporate information from providers, community and social supports, and others that facilitate and enable personalized health within a connected health network. These improvements also will help the various organizations and individuals establish effective work streams that lead to better outcomes and resource use in each sector of the broadly inclusive health enterprise. Federal policies that reinforce these changes and continue the focus and attention on person-centered decisions can amplify the work already underway in this area.

Addressing Opioid Drug-Related Overdose, Death, and Dependence

HHS is focused on implementing evidence-based approaches to reduce: 1) opioid overdoses and overdose-related mortality; and 2) the prevalence of opioid use disorder. In March 2015, HHS announced a targeted initiative aimed at reducing prescription opioid and heroin related overdose, death, and dependence. Deaths from drug overdose have risen steadily over the past two decades and currently outnumber deaths from car accidents in the United States. The Secretary's efforts focus on three priority areas that tackle the opioid crisis, significantly impacting those struggling with substance use disorders and helping save lives. One key priority includes providing training and educational resources, including updated prescriber guidelines, to assist health professionals in making informed prescribing decisions and address the over-prescribing of opioids. Part of this priority includes supporting data sharing for safe prescribing by facilitating prescription drug monitoring programs (PDMP) and health IT integration and further adoption of electronic prescribing practices.

Public health entities require interoperable electronic health information to detect, track, and manage illness outbreaks. Improved and coordinated access to information from inside and outside the formal delivery system among public health entities and home- and community-based supports increases their ability to analyze population health trends, identify at-risk populations, address local social and health determinants, pursue proactive illness prevention and health promotion strategies, and promote healthy choices for all populations and diverse communities. It can also help protect communities during public health emergencies and increase the ability to conduct and contribute to medical product safety surveillance.

Through improved information sharing and facilitating strong relationships between clinical and non-clinical entities and providers, health IT can lead to faster, more efficient methods for public health departments and social services providers to protect and support community health and perform more effective needs assessments. These organizations need to build the technical, administrative, and workforce infrastructure to receive, manage, and make use of the increasing volume of electronic health-related information and technological facilitators.

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❖ Infrastructure to Support Research, Scientific Knowledge, and Innovation

Research drives innovation and scientific discovery. As health IT use increases among individuals, providers, and public health entities, it creates a rich source of data. This affords exciting new opportunities to use health IT and new data to enhance clinical decision support, deepen quality improvement, reduce health disparities, improve post-marketing surveillance of the effects of medical drugs and medical devices, enhance care transitions, and enable research on prevention, diagnosis, and treatment of disease and disability. The federal government plays a central role in funding and performing original research, training researchers, and maintaining literature databases and other resources, and has a responsibility to identify methods and resources, such as health IT, that can improve upon this role.

Individuals will benefit from scientific and technological change in their self-care and community. Their effective interactions with the care delivery system and increased involvement in system improvements and research will help determine how the system is redesigned and deployed. However, information from care encounters provides a partial picture of an individual's health. Increasingly, individuals will have the ability to contribute information through mobile apps, sensors, social media, and medical devices. A learning health system will promote improved care that is individualized and delivered in a collaborative and respectful manner. It should also leverage electronic health information from multiple sources. An integrated system will facilitate analysis of real-world variations in tests and treatments, identifying the best outcomes, and help accelerate dissemination of this information to providers, individuals and the public in appropriate formats.

Interoperable electronic health information collected as a byproduct of care can allow care teams to develop solutions to improve the health of the individuals receiving care and services and measure the effectiveness of their actions. This can create a continuous feedback loop that not only leads to quality improvement, but also supports more rapid translation of research findings into better care and health.

Disseminating these results can inform the delivery system, influence guidelines and protocols, and significantly curb the time between discovery and action.

A learning health system should also facilitate the expedited translation of science and evidence into treatment paths that match individual preferences, assisting individuals and their care team with understanding the risks and benefits from competing therapeutic options. Care teams and researchers can leverage this information to provide person-centered care and design research studies likely to produce higher quality results, particularly in precision medicine, and in high-impact health challenges, such as heart disease, diabetes, and other chronic illnesses. Approaches such as human-factors engineering can help stakeholders learn how to best use or develop new health IT to improve health and health care, and identify which kinds of electronic health tools and their applications are most effective in reaching personal, population, and public health goals.

Precision Medicine Initiative

The Precision Medicine Initiative is a new research effort to revolutionize how we improve health and treat disease. The initiative will pioneer a new model of patient-powered research that promises to accelerate biomedical discoveries and provide health care providers with new tools, knowledge, and therapies, augmenting the ability to choose which treatments will work best for which patients.

Near-term goals of the Precision Medicine Initiative are to intensify efforts to apply precision medicine to cancer through innovative clinical trials of targeted drugs for adult and pediatric cancers; use of combination therapies; and increase knowledge to overcome drug resistance.

A longer-term goal of this initiative is to create a research cohort of more than one million American volunteers who will share genetic data, biological samples, and diet and lifestyle information, all linked to their EHRs if they choose.

Research can also lead to improved workflows and better and safer use of health IT. Many health IT studies focus on whether health IT improves health care and health outcomes; however, not as many studies consider how to implement health IT solutions in ways that ensure that it meets its full potential. Federal science and research play an important role in advancing evidence on how health IT can improve health outcomes, reduce health disparities, and improve care delivery, as well as how to make these systems easier and safer for people of all abilities to use. Achieving these objectives requires significant collaboration between the private and public sector.

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FEDERAL EFFORTS TO MODERNIZE THE NATION'S HEALTH IT INFRASTRUCTURE

This Plan envisions the establishment of a responsive infrastructure that will enable person-centered health and health care goals, transform health care delivery and community health, and foster research, scientific knowledge, and innovation. These objectives set the purpose for improving the nation's health IT infrastructure to make it more inclusive, and to leverage both public and market-based solutions to make this infrastructure adaptable, so that it can both stimulate and keep pace with innovation.

To implement this Plan, the federal government has identified strategies that apply its most effective levers to drive change in the health environment and allow the government to prepare for emergent change from market and social sectors. Below are key federal initiatives that encompass multiple strategies to meet this Plan's mission and goals.

Defense Healthcare Management System Modernization Program (DHMSM)

DoD's military health system purchases or provides care to almost 10 million beneficiaries. The mission of the DHMSM program is to competitively acquire, test, deliver, and successfully transition to a state-of-the-market EHR system. Key to this modernization program is to engage the larger health IT marketplace to identify and implement a solution that provides best value and meets operational requirements. This approach allows the DoD to leverage the latest commercial technologies, improve usability, and save on costs.

In July 2015, DoD awarded a contract to modernize their EHR system. A key goal of the contract is to improve interoperability among the DoD, the VA and private sector health-care providers and enable each to access and update health records. Civilian health care organizations provide nearly 60 percent of health care for service members and their families. In addition to this contract, the VA and DoD spearhead numerous interagency data sharing activities and deliver IT solutions that improve the sharing of electronic health information. These IT solutions improve interoperability, improving care continuity and enhancing health care delivery to beneficiaries.

Finalize and Implement the Interoperability Roadmap

Secure, interoperable, and necessary health information technology is paramount to achieving this Plan's mission and vision. The significant progress achieved in health IT adoption has increased the demand to securely share health information electronically and use it to improve health and health care. Yet despite this progress, and for varied and complex reasons, significant challenges continue to limit the widespread and effective sharing of electronic health information across the care continuum.[11]

Interoperable health information and health IT solutions will lead to more efficient and effective health systems, better clinical decision support, scientific advancement, and a continuously learning health system. Interoperable electronic exchange of health information allows individuals, providers, public

health departments, researchers, and payers to securely find and use vital health information, enhancing care delivery, public health, and research, and empowering individuals to make informed choices regarding their health. Federal strategies center on creating an infrastructure that encourages interoperable health IT regardless of technology developer, platform, location, provider, policy, or other boundaries.

The *Shared Nationwide Interoperability Roadmap, Draft Version 1.0* (Draft Roadmap) is a complementary planning document that proposes critical actions for both public and private stakeholders that will advance our nation towards an interoperable health IT ecosystem, advance research, and ultimately achieve a learning health system that efficiently and collectively improves health. Whereas this Plan outlines federal efforts to focus on health IT beyond EHRs and health beyond health care, the *Draft Roadmap* details the interoperable infrastructure needed to support appropriate sharing and use of electronic health information toward achieving a learning health system. The *Draft Roadmap* is organized around five building blocks for a nationwide interoperable health information technology infrastructure:

- Core technical standards and functions
- Certification to support adoption and optimization of health IT products and services
- Privacy and security protections for health information
- Supportive business, clinical, cultural, and regulatory environments
- Rules of engagement and governance

10-Year Overarching Goals and Objectives for Expanding Interoperable Health IT Infrastructure

This *Draft Roadmap* proposes critical actions that the public and private sector need to take to advance the country towards an interoperable health IT ecosystem over the next 10 years, identifying a path to achieving the vision in the three-, six- and ten-year time frames and a vision to catalyze collaboration and action across government, communities, and the private sector.

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❖ Protect the privacy and security of health information

As more health information transitions to electronic formats that are shared commonly, it is important that all stakeholders recognize their responsibility in protecting health information.[13] The federal government plays a key role in promoting transparency in how health care organizations, companies, technology developers, and other entities obtain, manage, and retain such health information. The government will provide oversight and guidance to encourage adherence to laws that protect the privacy and security of

health information. The government's guidance should also help reduce misunderstanding and confusion of privacy and security laws that may dissuade parties from appropriate health information exchange.

It is important for individuals to understand what kinds of data are collected about them, who collects it, and how data will be used, shared, and disclosed, consistent with Fair Information Practice Principles.[14] The federal government is committed to stimulating the development and use of policy, standards, and technology to advance individuals' rights to securely access, amend, and make choices for the disclosure of their electronic health information.

The federal government supports these developments to achieve two ends. First, the government should facilitate patients' ability to control the exchange of specific health information that many consider to be "sensitive" (which includes information related to substance use disorder treatment, reproductive health, mental health, domestic abuse, or HIV), in an electronic environment. For example, using technology to document applicable permissions to access, use or disclose health information saves time and resources, and can build trust and confidence in the system overall.[15] Second, such developments should support the availability of health information about individuals when and where they need it for treatment.

Federal Efforts on Cybersecurity

Recognizing that the national and economic security of the United States depends on the reliable functioning of critical infrastructure, in 2013, President Barack Obama issued Executive Order 13636, Improving Critical Infrastructure Cybersecurity. It directed the National Institute of Standards and Technology (NIST) to work with stakeholders to develop a voluntary framework – based on existing standards, guidelines, and practices – for reducing cyber risks to critical infrastructure. This includes the integrated health IT infrastructure and the information and communications technology (ICT) infrastructure, necessary for health information interoperability, the advancement of a learning health system, and the Internet of Things (IoT). Further, in response to the Cybersecurity Enhancement Act of 2014, federal agencies are developing an updated federal cybersecurity research and development strategic plan. The strategic plan will be used to guide and coordinate federally funded cybersecurity research.

Additionally, the government will provide privacy and security (including health information breach prevention) educational material, based on federal or advisory group recommendations, to key stakeholders, including individuals. Security and the intrinsic value of health and other data are continually evolving, placing systems at increasing risk. Maintaining and improving security of technology and information requires constant vigilance from all stakeholders. The federal government will continue to work internally and with external groups to help ensure that the nation's health IT infrastructure and information is secure.

The privacy and security of health information is important to the federal government, and the government will continue to pursue policies, levers, and enforcement mechanisms that engender confidence and trust for individuals and their families, caregivers, providers, and others.

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❖ Identify, Prioritize, and Advance Technical Standards

Health information is useful only if the end user can access and understand the information. Standards are the medium for individuals, health care entities, and public health agencies, health IT solutions, and medical devices to find, organize, exchange, secure, and share information. They must be maintained and progressively enhanced, based on feedback from real use, and need to accommodate emerging areas, such as using genomic data to achieve precision medicine and allowing integration of non-laboratory data into health records and research.

Use of common technical standards and specifications are necessary for electronic health information to move seamlessly and securely. Much of the content of clinical records – including laboratory test results, clinical measurements (*e.g.,* blood pressure), test orders, medical problems, and drug names – is structured and susceptible to standardization. However, some of the content – such as provider notes and other notations – may be more helpful as free text; health IT should aim to identify methods to capture and present this nonstandard information in more helpful ways that can improve the patient-provider encounter. Using data elements consistently and reliably will allow for collecting information for individual health needs as well as for reuse of that information to drive decision support, quality measurement and reporting, population health management, public health, and research. Focusing on the highest priority standards can help accelerate their widespread adoption, allowing health IT to be more usable and efficient.

The ONC HIT Certification Program serves as a valuable mechanism for promoting the use of common standards for interoperability; however, significant work remains. To promote consistent standards implementation and reduce implementation variability, the federal government will continue to work with standards development organizations and industry stakeholders to assure users that newer versions of standards and implementation specifications more clearly describe discrete, germane requirements that are regularly evaluated and updated. Initially, federal efforts will focus on efficiently addressing prioritized standards that enable sending, receiving, finding, and using a basic set of essential health information. ONC will continue to assess the ONC HIT Certification Program to ensure it can address and reinforce health IT applications and requirements that support federal value-based and alternative payment models.

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❖ Increasing User and Market Confidence in the Safety and Safe Use of Health IT

The technological marketplace has evolved, as providers and facilities become increasingly invested in the safety and safe use of a broad set of emergent technologies and solutions. Stakeholders are demanding ways to improve existing EHRs, use personal technology, such as smartphones and tablets, and integrate information from other technologies such as bedside infusion pumps, monitors, and ultrasound, so that technology and information safety and safe use is more seamless, user-friendly, and comprehensive. Evidence suggests health IT improves patient safety; however, poor implementation or improper use of otherwise safe systems can lead to adverse outcomes.[16] For the nation to collectively move to an expansive electronic health information environment, individuals, health care providers, and organizations need confidence that health IT solutions are secure, safe, and useful.

Food and Drug Administration's (FDA) Sentinel Initiative

Launched in 2008 by the Food and Drug Administration (FDA), the Sentinel Initiative aims to develop and implement a proactive system that will complement existing systems that the agency has in place to track reports of adverse events linked to the use of its regulated products. A national electronic system that will transform FDA's ability to track the safety of drugs, biologics, and medical devices once they reach the market is now being implemented. Monitoring the safety of its regulated products is a major part of FDA's mission to protect public health. The Sentinel System enables FDA to actively query diverse automated healthcare data holders—like EHRs, administrative and insurance claims databases, and registries—to evaluate possible medical product safety issues quickly and securely.

Individuals and providers must also have the ability to change health IT products, systems, or services without undue financial burden or the loss of valuable information. The implementation of this Plan, as well as the 2013 HHS Health IT Patient Safety Action and Surveillance Plan, will build and maintain confidence in the safety of the health IT solutions and support a competitive and innovative market. Additionally, as part of the federal government's responsibility to protect the public's health and safety, a collaborative effort to design an appropriate, risk-based framework to assess regulation of medical devices and health IT resulted in a draft report as part of the 2012 Food and Drug Administration Safety and Innovation Act (FDASIA). This framework will be applied as necessary as health IT progresses.

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❖ Advancing a National Communications Infrastructure

Telehealth is 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, and to promote individual self-management and well-being. Technologies include videoconferencing, social media and mobile applications, store-and-forward imaging, streaming media, and terrestrial and wireless communications.

A learning health system also incorporates advanced health models that increasingly leverage technology, such as telecommunications technology, to deliver health and clinical services remotely, and improve access to care across clinical and non-clinical community settings. For example, remote monitoring can allow a care team to monitor an individual's health status while she is in the comfort of her home, improving the individual's care experience, or allow a rural hospital to expand its intensive care unit capacity through virtual providers. Mobile health apps can remind individuals to take medication or to access and contribute electronic health information to their health record, clinical registry, or other repositories. Telehealth can also expand access to care, allowing individuals to receive specialty care and improve convenience, such as for off-shore workers or home-bound care.

A strong national communications infrastructure is a prerequisite for sharing electronic health information among providers, individuals, and national emergency first responders, delivering telehealth and remote monitoring solutions, using mobile health applications, and performing highly complex research, business intelligence analyses, and other actions to transform clinical practice and improve health and community resilience.

Significant efforts are underway in both the public and private sectors to bring broadband internet services to all Americans. Maximizing availability of broadband services to all – including low income Americans, those in rural areas and tribal lands, and individuals with disabilities is a key national objective.[17] Nevertheless, data shows that 55 million Americans – 17 percent of the population – lack access to advanced broadband services. There are also significant disparities in broadband access and use. More than half of the population in rural areas, and nearly two-thirds of the population in tribal areas lack access to advanced broadband services. Even in areas where broadband services are available, approximately 100 million Americans still do not subscribe.[18] The inability among many to maintain a strong internet connection inhibits the sharing of high-quality data and graphics, such as medical images, and the ability to leverage video telecommunications needed for telehealth. As the government improves the communication infrastructure, it must retain sensitivity and responsiveness to individuals' technology literacy as well.

Broadband that Works

Building on the Federal Communications Commission's (FCC's) net neutrality plan, in 2015 the White House announced its plan to promote "Broadband that Works," a public-private effort to help more Americans, in more communities around the country, get access to fast and affordable broadband internet services. Efforts include (1) calling to end laws that harm broadband service competition; (2) expanding the National Movement of Local Leaders for Better Broadband; (3) launching a new initiative through the Department of Commerce, BroadbandUSA, to support community broadband services projects; (4) unveiling new grant and loan opportunities for rural providers through the Department of Agriculture; and (5) establishing a Broadband Opportunity Council to remove regulatory barriers and improve investment incentives.

Expanded, secure, and affordable high-speed wireless and broadband services, choice, and spectrum availability will support electronic health information sharing and use, support the communication required for care delivery, and support the continuity of health care and public health services during disasters and public health emergencies.

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❖ Collaborative Effort by All Stakeholders

The federal government plays three roles in coordinating its work with the private sector: contributor, beneficiary, and collaborator.[19] By navigating the right balance among these three roles, federal agencies will promote a fertile and competitive marketplace ripe for innovation that advances this Plan's mission.

While protecting privacy, security, and confidentiality, the federal government is publishing new open data sources, converting existing data to electronic formats, requiring public access to data resulting from federally funded research, and making data easier to use via downloading, application programming interfaces, and access in the cloud. The federal government aims to encourage private-sector innovators and entrepreneurs, as well as researchers, to use government and government-funded data to create useful applications, products, services, and features that help improve health and health care.

Patient-Centered Outcomes Research

Patient-centered outcomes research can help stakeholders make informed health decisions by increasing the quality and relevance of the evidence upon which those decisions are made. However, the time and expense of conducting high-quality research that produces definitive results present a key barrier to conducting needed research. Health IT can serve as a vehicle to facilitate more efficient research processes—particularly around the collection and use of research data.

HHS' Office of the Secretary receives funds transferred from the Patient-Centered Outcomes Research Trust Fund annually between 2011 and 2019 to build data capacity for patient-centered outcomes research, with a cumulative estimated total of over $140 million. The goal for these investments is to enable a comprehensive, interoperable, and sustainable data network infrastructure to collect, link, and analyze data from multiple sources to facilitate patient-centered outcomes research.

Federal efforts will also focus on improving accessibility, technical standards, services, policies, federal data, and governance structures that support person-centered outcomes research. This work will facilitate the progressive sophistication of a purposeful learning health system that allows providers, communities, and researchers to continuously learn and advance the goal of improved health and health care. New capabilities will emerge that increasingly enhance research, allowing researchers to search and contribute data in new ways. Open data helps create opportunities for innovators to leverage the information to build, deploy, and scale solutions that help individuals, providers, and others improve health and care.

Beyond releasing data sets, the federal government funds innovative research for health IT products and solutions. The government also collaborates with standards development organizations to ensure that health IT products and solutions can use standards necessary to integrate and share clinical and person-generated health data across platforms and resources, ensuring interoperability and smooth information flow. Further, federal health systems can contribute organizational learning that leads to innovations in health IT usability and improved care delivery.

ABOUT THIS PLAN

❖ Strategic Plan Development

To update the federal health IT Plan and implementation approach, ONC convened the Federal Health IT Advisory Council, an internal forum to discuss program alignments for existing and emerging health and health IT matters, to prioritize objectives and define implementation accountabilities within the Plan, and to coordinate federal health IT policy decisions. ONC drafted the Plan in consultation with over thirty-five entities and departments participating on the Council. These federal partners encompass broad departmental missions with regulatory, health care provider, payer, human services, and privacy and security responsibilities. Collectively, the Council conveyed a diverse understanding of the unique needs and concerns of their stakeholders to ensure the Plan's direction would allow for varied approaches and methods to improve individuals' well-being and advance health IT's capacity to achieve broad health and care goals. Representative entities currently comprising the Federal Health IT Advisory Council as Plan developers are listed at the conclusion of this Plan.

❖ How the Plan Evolved Since the Draft Release

Through a framework established for ONC's federal advisory groups, particularly the Health IT Policy Committee, ONC obtained public input to develop the Plan's content. Additionally, ONC accepted formal public comments on the Plan from December 2014 through February 2015, where ONC received roughly 400 comments from a wide array of stakeholders, including individuals, providers, health care organizations, technology developers, public health entities, EMS practitioners, and advocacy groups.

Most commenters expressed general support for the Plan's vision of better health and using electronic health information to provide better care, aid research, and improve public health. However, the Draft Plan's emphasis on "data" and "systems" resonated less than an overarching desire for the government to demonstrate how individuals, communities, providers, developers, and researchers can work together, supported by more useful information and more integrated health IT, to achieve the Plan's vision and mission. While continuing to expand health IT adoption, this revised Plan focuses primarily on how systems and individuals, organizations, and communities will use the information that flows through them. The Plan revision has an expanded narrative to show the interdependencies of the various goals, objectives, and strategies: the federal government will pursue strategies that aim to accomplish many interrelated objectives, rather than seeking progress in one area before addressing others. The Plan's strategies and outcomes show how the federal government's actions will firmly establish the supporting health IT infrastructure necessary for expanding the use of interoperable electronic health information to improve health and wellness.

❖ Implementation

Federal partners, in coordination with federal advisory committees, including the Health IT Policy and Standards Committees, interagency groups, and ONC, will work to implement the Plan and review and publicly report progress for its goals. A public annual progress report will link where this Plan's strategies connect to other federal strategic initiatives for additional detail and context. ONC, in its role as

coordinator, will maintain primary responsibility for the Plan's implementation, but each federal contributor has committed to specific strategies, as well as the Plan's overall success.

There is already significant work underway. Federal agencies have begun implementing certain activities and strategies included in the Plan. This work ranges from detailed and more specific action plans to significant federal initiatives. The *Draft Nationwide Interoperability Roadmap*, the *HHS Health IT Patient Safety Action and Surveillance Plan*, and the *Draft FDASIA Health IT Report* respectively provide more granular information on actions related to interoperability, patient safety, and the health IT regulatory framework. Another component of Plan implementation involves DoD's efforts to efficiently improve health care for the active duty military, veterans, and beneficiaries by modernizing the EHR for the Military Health System and establishing seamless medical data sharing between DoD and VA, and with the private sector.

Implementation also encompasses federal initiatives such as HHS' goals to shift Medicare and Medicaid payment from volume to value, and the creation of a Health Care Payment Learning and Action Network, an initiative where HHS will work with private payers, employers, individuals, providers, states and state Medicaid programs, and other partners to expand alternative payment models into their programs. It also includes transformative research efforts, such as the Precision Medicine Initiative and using the Patient-Centered Outcomes Research Trust Fund. Efforts to streamline and align programs were included in the Stage 3 notice of proposed rulemaking for the Medicare and Medicaid EHR Incentive Programs and the notice of proposed rulemaking for the 2015 Edition Health IT Certification Criteria. Additional alignment will occur through implementation of MACRA and other key legislative and executive authorities.

Furthermore, continued outreach to stakeholders by all the federal partners involved in the Plan's development and implementation will allow the Plan to evolve as the health IT marketplace matures, subsequently requiring new or modified approaches to policies and federal activities. This engagement will also seek to provide the public with a better understanding of the federal government's direction to improve health care, individual and community health, and research, supported by the use of interoperable health information, and to receive feedback on what remains to be improved.

MEASUREMENT & REPORTING

By design, this federal strategy is broad in scope and includes actions initiated by numerous federal departments, agencies, and offices. Although each federal entity has its own respective mission, levers, programs, and activities, the federal government's collective mission for health IT is to improve the health and well-being of individuals and communities through health information that is available when and where it matters most. Because this Plan is linked to key national plans and initiatives addressing strategies and initiatives that rely on health IT to achieve their goals, our measurement and reporting will focus largely on whether this Plan's implementation of a health IT infrastructure allows those plans to accomplish their visions. These plans include detailed measurement sections on key outcomes related to strategies highlighted across the Plan. The federal government will aim to be flexible in modifying strategies and correcting course to support the nation's ability to meet the vision, mission, and goals of an applied health IT infrastructure. Along with direct monitoring of the key initiatives and plans, the federal partners committed to this Plan's achievement will separately track progress in their respective areas. As the infrastructure and strategies evolve during the Plan's life-cycle, so, too, will the selected proxies, to ensure the government remains accountable to the public and to the principles established in the Plan.

These proxy indicators will provide insight on whether the nation is progressing towards realizing part of the Plan's mission; however, these indicators are limited in their ability to provide a comprehensive understanding of whether federal actions described in this Plan are on track and whether these actions are achieving their desired impact. Beginning in 2016, HHS will use its annual congressional report on the Adoption of Health IT and Related Efforts to Facilitate the Electronic Use and Exchange of Health Information to publish a more nuanced analysis and understanding of the health IT landscape and progress towards goals and objectives described in this Plan. The report will also provide detailed information on the progress of key health IT-related initiatives, and identify gaps and barriers.

Data included in that report currently rely on self-reported data from national surveys and federal reporting requirements. The national surveys include data from office-based physicians, hospitals, individuals and a subset of providers in long-term care settings. Participants of the Medicare and Medicaid EHR Incentive Programs provide data for federal reporting requirements. In the near-term, this report will likely continue to use self-reported data to measure progress. However, this Plan's federal contributors recognize that measures assessing health IT adoption, interoperable exchange, and use are not sufficient to monitor progress. Long-term measurement will need to assess the impacts of federal actions related to health IT, and how these actions influence the Plan's goals of advancing person-centered health and self-management, transforming health care delivery and community health, and fostering research, scientific knowledge, and innovation.

During implementation of this Plan, federal contributors will work continuously to refine the type of data collected and reported to increase transparency and accountability. ONC will also work with the Health IT Policy and Standards Committees for guidance on measurement concepts and domains. Further, ONC will regularly update the Health IT Dashboard to display progress across a number of health IT domains. Additionally, this Plan's federal contributors will look for ways to include health IT measurement concepts in complementary strategic plans and initiatives.

The federal government will begin to measure the Plan's success by monitoring the following set of proxy indicators that ONC will collect and report publicly on an annual basis:

- Percent of office-based physicians that treat patients seen by providers outside medical organization that have clinical information from those outside encounters electronically available at the point of care (*Data Source: National Center for Health Statistics (NCHS) National EHR Survey*)

- Percent of non-federal acute care hospitals that routinely have necessary clinical information available electronically from outside providers or sources when treating a patient seen by another health care provider or setting (*Data Source: American Hospital Association's Annual Survey Information Technology Supplement)*

- Percent of individuals who experienced one or more gaps in health information when seeking care (*Data Source: ONC Consumer Survey of Attitudes Toward the Privacy and Security Aspects of Electronic Health Records and Health Information Exchange)*

GOAL 1: ADVANCE PERSON-CENTERED AND SELF-MANAGED HEALTH

Objective 1A: Empower individual, family, and caregiver health management and engagement

Strategies:

1. Disseminate educational resources and explore policy options that allow individuals choice and convenience in using apps and tools to securely compile, aggregate, and use health information to achieve health and wellness goals

2. Support the development of policies, standards, technology, guidance, and solutions to facilitate individuals' ability to securely access, manage, control, and authorize the disclosure of specific electronic health information and incorporate this information into their health IT tools

3. Develop and disseminate tools and educational resources for individuals that are designed to help them understand their health information, costs, and care options, and become advocates for their own health

4. Promote health IT that allows providers, individuals, and caregivers to use evidence-based health information resources, logistical supports, decision aids, and risk calculators

5. Increase the use of telehealth, virtual medicine, and innovative technologies (*e.g.*, sensors, mobile technology, medical devices, assistive technologies, *e*Visits) in federal care delivery systems and programs

6. Advance providers' ability to address the health and health IT literacy issues for diverse individual and caregiver populations so that the technology matches and empowers their health management and engagement, utilizing culturally and linguistically appropriate tools

Federal Contributors

ACL, CDC, CMS, DoD, FDA, FTC, HRSA, IHS, OCR, ONC, SAMHSA, VA

GOAL 1: ADVANCE PERSON-CENTERED AND SELF-MANAGED HEALTH

Objective 1B: Foster individual, provider, and community partnerships

Strategies:

1. Support health IT policies that make available products that securely integrate self-generated health information, self-reported outcomes, and genomic information into an individual's longitudinal care records and self-care and wellness technologies
2. Improve care providers' and individuals' understanding of risks and responsibilities of care options that lead to informed, shared decision-making
3. Expand ability for individuals to safely and securely contribute relevant and usable electronic health information and define preferences and values to their clinicians
4. Improve access to health care, community resources, human and social services, and health education programs through health IT products and innovative use of services
5. Leverage technology to share salient research findings that inform decision-making for individuals, providers, and community organizations

Federal Contributors

ACF, ACL, AHRQ, CDC, CMS, DoD, FDA, HHS OASH, HRSA, IHS, NIH, ONC, SAMHSA, VA

GOAL 2: TRANSFORM HEALTH CARE DELIVERY AND COMMUNITY HEALTH

Objective 2A: Improve health care quality, access, and experience through safe, timely, effective, efficient, equitable, and person-centered care

Strategies:

1. Increase the adoption and effective use of certified health IT across the care continuum
2. Improve health IT usability and clinician workflow by fostering innovation through policies and methods (*e.g.,* workshops, development and validation test beds), that promote the well-designed incorporation of usable electronic information, clinical quality measurement, safety and adverse event information, human factor research findings, and clinical decision support
3. Incorporate telehealth and mobile health technologies and services within federal programs providing or paying for health care
4. Develop and encourage the increased use of health IT that support providers' and patients' capturing and reporting quality measures, patient experience, adherence to evidence-based guidelines, and improved person-centered health outcomes
5. Promote data collection, clinical decision support, and analytic capabilities that help lead to precision medicine
6. Promote data collection, continuous quality improvement and analytic capabilities that identify underserved or at risk individuals and communities to target timely health interventions
7. Develop health IT solutions that allow federal regulatory agencies to receive and evaluate pharmaceutical, biologic, medical and other product risks more efficiently and promote the safe use of these products

Federal Contributors

AHRQ, CMS, DoD, FDA, HRSA, IHS, NIH, NIST, ONC, VA

GOAL 2: TRANSFORM HEALTH CARE DELIVERY AND COMMUNITY HEALTH

Objective 2B: Support the delivery of high-value health care

Strategies:

1. Reward providers that coordinate care within alternative payment models and merit-based payment systems
2. Encourage collaboration between public and private providers and payers to facilitate interoperability and comprehensive and coordinated care delivery
3. Expand the capacity of the clinical, community supports, and analytic workforce to use health IT and data analytics
4. Provide technical assistance to providers to develop the skills, workflows, and tools needed to improve care delivery and transition to alternative payment models
5. Standardize and expand regional multi-payer claims and clinical data infrastructure to facilitate clinical performance reporting and timely feedback to providers
6. Identify and increase administrative efficiencies that reduce cost, improve provider and patient experiences, and support transparent, meaningful feedback on aligned quality measures that providers, patients, and caregivers can use for quality improvement and decision making
7. Improve linkages among health and human services databases, registries, or other sources to measure system effectiveness and improve clinical outcomes while applying appropriate privacy and security protections
8. Increase use of health IT systems to provide evidence-based guidance to individuals, providers, and community organizations on appropriate use of screening and prevention services
9. Work with communities on demonstrations and pilots to explore ways for using health IT to expedite enrollment, facilitate coordination and implement complementary health strategies among clinical, behavioral, preventive services, and social services with appropriate privacy and security protections

Federal Contributors

ACF, ACL, AHRQ, ASPE, CMS, DoD, DOT, FDA, HRSA, IHS, ONC, OCR, SAMHSA, SSA, VA

GOAL 2: TRANSFORM HEALTH CARE DELIVERY AND COMMUNITY HEALTH

Objective 2C: Protect and promote public health and healthy, resilient communities

Strategies:

1. Expand the capacity of the public health and community supports workforce to use health IT and predictive analytics for early detection and mediation of emerging hazards, public health threats, and to promote community well-being and resilience

2. Increase public health entities' ability to use, benefit from, and manage advances in real-time electronic health information for public health surveillance, situational awareness, and targeted alerting

3. Enhance or, if necessary, develop and maintain standards for the unique health IT needs associated with emergency care, public health emergencies, and disasters to include rapid transfers of care, unidentified individuals, and patient tracking, movement, and evacuation

4. Increase public health entities' ability to manage electronic health information to inform planning and decision making to ensure continuity of appropriate care during disasters and public health emergencies

5. Support the use of health IT that can help communities conduct needs and assets assessments and protect high-risk individuals

6. Promote collaborations among public and private healthcare providers, and public health agencies to improve individual, family and community health outcomes; and promote health IT data use in community efforts to coordinate and implement social programs for population health care

7. Expand the capacity of health IT to integrate, share, and use data on social determinants of health to foster the health and improve the management of care in diverse, underserved communities

Federal Contributors

ACF, ACL, ASPR, CDC, DoD, DOT, FDA, HHS OASH, HRSA, IHS, ONC, SAMHSA, VA

GOAL 3: FOSTER RESEARCH, SCIENTIFIC KNOWLEDGE, AND INNOVATION

Objective 3A: Increase access to and usability of high-quality electronic health information and services

Strategies:

1. Increase the number, timeliness, quality, and usability of federal health and other relevant data sets available for public use, consistent with HIPAA, Fair Information Practice Principles, the Privacy Act, 42 CFR Part 2, and other applicable laws
2. Collaborate with researchers, innovators, and users on strategic dataset releases, appropriate data dissemination, data discovery and location mechanisms, and education to support innovative data use
3. Pioneer a new scientific model that emphasizes engaged participants, responsible data sharing, and privacy protection through a research cohort of volunteers who share genetic data, biological samples, and diet and lifestyle information, connected through health IT
4. Encourage electronic access to clinical trial and registry data from domestic and international sources to expand person-centered outcomes research
5. Promote innovation in clinical trials and other clinical studies through strategic leveraging of validated clinical and person-generated health data and health IT systems in study design and execution
6. Expand the capacity and design of collaborative data networks and invest in health IT infrastructure and standards to support coordinated precision medicine, person-centered outcomes, and health services research development and findings dissemination

Federal Contributors

AHRQ, ASPE, CDC, CMS, DoD, FDA, HHS CIO, HHS CTO, HRSA, NIH, NIST, NSF, OCR, ONC, SAMHSA, VA

GOAL 3: FOSTER RESEARCH, SCIENTIFIC KNOWLEDGE, AND INNOVATION

Objective 3B: Accelerate the development and commercialization of innovative technologies and solutions

Strategies:

1. Encourage the application of human factors, health literacy, and user-centered design and incorporate consumer testing in the development and use of health IT products, systems, and services
2. Encourage innovative solutions that simplify individual, family, and caregiver access and use of their comprehensive health information from disparate sources
3. Fund and disseminate organizational learning and research, promote innovation, and remove impediments for secure new health IT products and solutions to help resolve challenging health problems, including mobile applications, wearable technologies, advances in big data, computation and analytic methods, and other scientific discoveries
4. Intensify efforts to apply precision medicine through innovative clinical trials, evaluate the ability of health IT to integrate research data, and build a comprehensive scientific knowledge base to move the concept of precision medicine into clinical practice
5. Promote transparency in communication about what information devices are collecting and how it is being used, shared, or retained
6. Identify methods for private and secure bidirectional integration of electronic health information from mobile health technologies and related social networking platforms to more effectively reach individuals and families, health care professionals, and diverse communities while protecting the privacy and security of the information

Federal Contributors

AHRQ, ASPE, FDA, FTC, HHS CIO, NIH, NSF, OCR, ONC, SAMHSA

GOAL 3: FOSTER RESEARCH, SCIENTIFIC KNOWLEDGE, AND INNOVATION

Objective 3C: Invest in, disseminate, and translate research on how health IT can improve health and care delivery

Strategies:

1. Promote, fund, and disseminate health services research and organizational learning that assesses the impact of health IT use and value-based purchasing incentives on improving health outcomes and reducing health disparities
2. Fund and distribute research to provide evidence and proven practices on use of health IT to improve the quality, safety, and value in care settings, among populations, and among human services organizations
3. Collect, analyze, and interpret data to assess the impact of health IT use to reduce health and health IT disparities in the quality, accessibility, and safety of health care and long-term supports and services
4. Explore the use of technology that enables enhanced information sharing for increased situational awareness, operational efficiency, and scene safety among EMS community and other care providers
5. Promote approaches to continuously monitor and update changes in evidence-based guidelines that are used in clinical decision support

Federal Contributors

AHRQ, ASPE, DoD, DOT, FDA, NIH, NSF, VA

GOAL 4: ENHANCE NATION'S HEALTH IT INFRASTRUCTURE

Objective 4A: Finalize and Implement the Nationwide Interoperability Roadmap

Strategies:

1. Collaborate with industry and public stakeholders to advance core technical standards for terminology and vocabulary, content and format, transport, and security
2. Leverage the ONC HIT Certification Program to ensure that a broad spectrum of health IT conforms to the technical standards necessary for capturing and exchanging information
3. Aim toward privacy and security-related policies, practices, and technology that keep pace with the expanded electronic exchange of information
4. Foster a supportive business, clinical, cultural, and regulatory environment that encourages interoperability
5. Publish guidance that defines high-level principles for policies and business practices that advance trust and interoperability

Federal Contributors

ACL, ASPR, CDC, CMS, DoD, DOJ, FCC, FDA, FTC, HRSA, IHS, NIH, NIST, OCR, ONC, SAMHSA, SSA, VA

GOAL 4: ENHANCE NATION'S HEALTH IT INFRASTRUCTURE

Objective 4B: Protect the privacy and security of electronic health information

Strategies:

1. Clarify requirements and expectations for secure and trusted exchange of electronic health information, consistent with applicable legal privacy protections and individuals' preferences, across states, networks, and entities
2. Continue development, administration, and enforcement of HIPAA privacy and security regulations for HIPAA covered entities and business associates
3. Continue enforcement of and guidance on applicable legal privacy and security requirements for entities not covered by HIPAA[20]
4. Test certified health IT products to ensure they incorporate privacy and security safeguards required for certification under ONC's Health IT Certification Program
5. Develop and implement policies, practices, and educational tools that advance interoperability while giving stakeholders confidence that privacy and security are maintained
6. Address cybersecurity risks in developing technologies and their use
7. Support, promote, and enhance information sharing capabilities within the health and public health sector for bi-directional information sharing about cyber threats and vulnerabilities between the private health care industry and the federal government
8. Work towards uniform policy and technical approaches to electronically document individuals' privacy choices, when those choices are required, in a computable format that is accessible to individuals and available in culturally and linguistically appropriate language

Federal Contributors

ASPR, CMS, CDC, DoD, FDA, FTC, HHS CIO, HHS OASH, IHS, NIH, NIST, NSF, OCR, ONC, SAMHSA, VA

GOAL 4: ENHANCE NATION'S HEALTH IT INFRASTRUCTURE

Objective 4C: Identify, prioritize, and advance technical standards to support secure and interoperable health information and health IT

Strategies:

1. Increase use of common standards among federal agencies, private industry, and the biomedical research community
2. Improve the capability of health IT to securely manage information from varied sources in both structured and unstructured formats
3. Encourage consistent standards implementation, reduce implementation variability, and improve modularity in health data standards for terminology and vocabulary, coding, data content and format, transport, and security
4. Advance standards for common data elements to enable capture and use for clinical decision support, clinical quality measures, research, and reporting
5. Encourage the adoption and use of prioritized sets of common standards through health IT certification, federal regulations and programs, and funding mechanisms

Federal Contributors

ASPR, CDC, CMS, DoD, DOJ, DOT, FCC, FDA, HRSA, IHS, NIH, NIST, ONC, SAMHSA, SSA, VA

GOAL 4: ENHANCE NATION'S HEALTH IT INFRASTRUCTURE

Objective 4D: Increase user and market confidence in the safety and safe use of health IT products, systems, and services

Strategies:

1. Increase the quantity and quality of data and knowledge on the safe use of health IT, and integrate this evidence into health IT certification
2. Support the identification, monitoring, and reporting of complete, precise, and accurate challenges and hazards of health IT design and use
3. Encourage use of certified health IT technology and qualified clinical data registries for reporting quality measures
4. Implement a balanced, transparent, and risk-based approach to health IT oversight
5. Develop, select, promote, and implement health IT standards in transparent ways that promote competition, foster innovation, and minimize barriers to market entry for developers and users
6. Advance standards that support interoperability between medical devices and certified health IT products and systems, including standards for documentation of medical device use by unique device identifier and methods for adverse event reporting
7. Assess and identify methods, best practices, and partnerships to improve data management, quality, and utility

Federal Contributors

AHRQ, DoD, FCC, FDA, FTC, NIST, ONC, VA

GOAL 4: ENHANCE NATION'S HEALTH IT INFRASTRUCTURE

Objective 4E: Advance a national communications infrastructure that supports health, safety, and care delivery

Strategies:

1. Expand access to and choice of broadly available networks with comparable upload and download speeds for individuals and providers in rural and other underserved communities
2. Increase access to broadband connectivity for health IT applications, such as high-resolution imaging, telehealth, and mobile health
3. Ensure health IT networks and communication infrastructure can manage future growth in health data volume and velocity to promote advanced analytics and information sharing
4. Ensure that the national health IT and telecommunications infrastructure are secure, resilient, and operational during disasters and public health emergencies
5. Collaborate with industry and other public stakeholders to promote the ability of consumers to fully access broadband-enabled health resources when and where needed

Federal Contributors

ASPR, DoD, DOT, FCC, FDA, USDA, VA

FEDERAL CONTRIBUTORS

Department of Health and Human Services

- Administration for Children & Families (ACF)
- Administration for Community Living (ACL)
- Agency for Healthcare Research and Quality (AHRQ)
- Centers for Disease Control and Prevention (CDC)
- Centers for Medicare & Medicaid Services (CMS)
- Food and Drug Administration (FDA)
- Health Resources and Services Administration (HRSA)
- Assistant Secretary for Financial Resources (ASFR)
- Assistant Secretary for Health (OASH)
- Assistant Secretary for Legislation (ASL)
- Assistant Secretary for Planning and Evaluation (ASPE)
- Assistant Secretary for Preparedness and Response (ASPR)
- Office of the National Coordinator for Health Information Technology (ONC)
- Office for Civil Rights (OCR)
- Office of the Chief Information Officer (OCIO)
- Office of the Chief Technology Officer (CTO)
- Office of the General Counsel (OGC)
- Office of Minority Health (OMH)
- Office of the Secretary (OS)
- Indian Health Service (IHS)
- National Institutes of Health (NIH)
- Substance Abuse and Mental Health Services Administration (SAMHSA)

Other Federal Contributors

- Department of Agriculture (USDA)
- Department of Defense (DoD)
- Department of Defense/Department of Veterans Affairs Interagency Program Office (DoD/VA IPO)
- Department of Education (DOE)
- Department of Justice (DOJ) and Bureau of Prisons (BOP)
- Department of Labor (DOL)
- Department of Transportation (DoT)
- Department of Veterans Affairs (VA)
- Federal Communications Commission (FCC)
- Federal Health Architecture (FHA)
- Federal Trade Commission (FTC)
- National Aeronautics and Space Administration (NASA)
- National Institute of Standards and Technology (NIST)
- National Science Foundation (NSF)
- Networking and Information Technology Research and Development (NITRD)
- Office of Personnel Management (OPM)
- Social Security Administration (SSA)

COMPLEMENTARY PLANS, STRATEGIES, & KEY EFFORTS

- U.S. of Department Health and Human Services' (HHS) Strategic Plan FY 2014-2018
- Healthy People 2020
- National Prevention Strategy
- National Quality Strategy
- National Health Security Strategy
- Centers for Medicare & Medicaid Services (CMS) Quality Strategy
- HHS Action Plan to Reduce Racial and Ethnic Health Disparities
- National Action Plan to Improve Health Literacy
- National Standards for Culturally and Linguistically Appropriate Services in Health and Health Care
- National Broadband Plan
- Shared Nationwide Interoperability Roadmap, Draft Version 1.0
- HHS Health IT Patient Safety Action and Surveillance Plan
- Draft FDASIA Health IT Report
- Precision Medicine Initiative
- FDA's Sentinel Initiative
- Patient-Centered Outcomes Research Trust Fund
- Blue Button Initiative
- Delivery System Transformation
- Department of Defense Healthcare Management Systems Modernization Program
- HHS' Opioid Abuse Initiative
- Federal Interagency Committee on EMS (FICEMS) Strategic Plan
- EMS Compass

NOTES

[1] Health information within the scope of this Plan includes that which is governed by HIPAA as well as that known as "sensitive information" and that governed by other applicable laws outside of HIPAA. The health information can be sourced electronically from medical devices, user-generated information, government datasets, and many other bits of information that inform health-related decision-making (both inside and outside the care delivery system). Electronic health information must also be connected in interoperable ways and supported by health IT that is useful and suitable for each authorized user.

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