The health care industry is late to the game when it comes to information sharing—understandably so, given the highly personal data involved. But since the Health IT for Economic and Clinical Health Act passed in 2009, the Office of the National Coordinator (ONC) for Health IT has been working to make it easy and secure for health providers to exchange patient information in order to provide better care. In the past five years, ONC has established numerous standards to this end, but creating a single national network is a work in progress, said Steve Posnack, director of the Office of Standards and Technology at ONC, during a recent webcast titled "Health Information Sharing: Evolving Strategies for Health Information Exchanges."

“The market for health information exchange is quite heterogeneous,” Posnack said. “There are a number of different entities and organizations and stakeholders that are participating in the facilitation of electronic health information exchange from one point to another.”

Currently, electronic health record (EHR) exchange takes three main approaches: query-based exchange, in which a provider needs to query a network to access your data at its home location; directed, in which providers know one another and how to technically communicate; and consumer-mediated exchange, in which the patients handle the transaction.

The field’s collection of major players includes health information organizations (HIOs), which are usually public/private partnerships at the regional or local level and have some form of governance and participation; Health Information Service Providers (HISPs), which are intermediaries that help facilitate information exchange among providers; EHR vendors; national service providers, which are consortia of HIOs and HISPs; hospitals; and accountable care organizations.

Interoperability can be tricky to define in the context of electronic health information exchange, says Steve Posnack, director of the Office of Standards and Technology at the Office of the National Coordinator for Health Information Technology. His office uses IEEE’s definition: “the ability of two or more systems or components to exchange information and to use the information that has been exchanged.” To get more clarity, he recommends that agency officials should ask themselves these five questions about interoperability:

1. What’s the purpose of having interoperability?
2. With whom?
3. With what data?
4. Via what infrastructure?
5. By when?
“It’s [about] how these technologies enable a connection between the providers of care with the patient.” —Dr. Neil C. Evans, co-director of Connected Health Office at VA’s Office of Informatics and Analytics

Progress by the Numbers

The case for health information exchange is easily made. For instance, if someone goes unconscious while out of town, the attending providers could ensure the best care if they could access the patient’s records from his or her doctors at home.

That’s why despite the fragmentation, providers and patients are embracing EHR exchange. The 2013 National Ambulatory Medical Care Physician Workflow Survey showed that 89 percent of surveyed providers say EHR exchange helps improve quality of care and 80 percent say it improved their practice’s efficiency. Also last year, the Analysis of Privacy and Security Survey showed that among the 28 percent of U.S. adults who are given access to their online medical record, 46 percent viewed their information, 44 percent shared the data with someone else and 39 percent downloaded data from the record.

Since ONC started, 51 grantees have implemented directed exchange mechanisms and 44 have had query-based exchange mechanisms implemented. Additionally, hospitals exchange with outside providers has grown significantly since 2008, Posnack said.

“That really shows a tremendous amount of effort on the part of health care providers to increase their capacity and the infrastructure that they’ve invested in to make electronic health information exchange possible,” he said.

Looking toward a united front, the office published “A 10-Year Vision to Achieve an Interoperable Health IT Infrastructure” with three-, six- and 10-year goals of using health IT to increase health care quality, lower costs and improve health; focus on supporting health broadly, including health care delivery; build incrementally over time from current tech and maintain focus on and empower individuals.

Part of that vision involves the Standards and Interoperability Framework, which started in 2010 as an open, collaborative community comprised of stakeholders from the public and private sectors that study initiatives focused on different critical interoperability challenges.

“Stakeholders come together, they develop a clinically oriented use case or user stories, they work toward the identification of the available standards to meet those use cases and standardize them and then work toward the development of real-world experience and getting implementer support through new initiatives, workgroups and pilots,” Posnack said.

The building blocks to interoperability start with vocabulary and code sets, he said, which should be well defined and machine-readable so they are universally understood.

Next comes content structure, which refers, for instance, to a document that contains multiple vocabularies. Then comes transportation—how the message moves from Point A to B—and security. The final building block is defining how participants find one another, which is typically via application programming interfaces (APIs), Posnack said.

The Power of Mobility

The Veterans Affairs Department oversees an enormous swath of care sites—1,400, to be precise—spread nationwide and in Guam, the Philippines and Puerto Rico, plus 151 medical centers and 820 community clinics. In 2013, VA facilities had about 86.4 million outpatient visits, and the department has 8.9 million enrollees.

To manage all of that, VA has been transitioning from a predominantly hospital-based system to a health-based one since 1996. A key tenet of the strategy is using mobile technology to be able to deliver resources to veterans as they access health care where they are, not just at hospitals, said Dr. Neil C. Evans, co-director of Connected Health Office at VA’s Office of Informatics and Analytics, during a recent webcast titled “Healthcare and mobility: How mobile solutions are revolutionizing patient care.”

“Mobility is delivering health information to patients where they are
through mobile applications,” Evans said. It “is part of being, in our mind, patient-centered, and it’s how we can deliver resources to help manage the overall health of our population.”

The department has implemented SMS text messaging, mobile applications and the MyHealtheVet portal, which has 2.5 million registered users and lets patients see their health records.

But “these technologies, in the grand scheme of things, are not what is ultimately critical,” he said. “Really it’s how these technologies enable a connection between the providers of care with the patient.”

VA officials started thinking about connected health a decade ago and launched a personal health portal in 2003 that now serves about 2.5 million people. Home telehealth started in 2000 and provided care to 608,000 patients in 2013.

Lessons Learned
Unlike an app, a successful mobile strategy can’t just be downloaded and implemented. It requires a lot of investment to operate properly and securely, Evans said. Officials must think through a development platform, common services that can be leveraged through mobile apps, the production environment that will support mobile apps, and the architecture and how it works with existing architecture.

What’s more, they must consider how to manage and secure devices for internal use, and establish governance. “It’s very important to think through these things in advance,” Evans said.

VA’s mobile-applications development environment has development, production and integration environments. The latter enables the department to create tools in a standardized location and reuse common services and development methods across its app suite. This setup also supports proper testing, Evans added, and accounts for security. For instance, no personal health information is stored on devices.

VA uses mobile apps to interact with both veterans and healthcare providers. The veteran-facing apps, native on Apple iOS and Android, are run in conjunction with the Defense Department and don’t connect to VA’s network. They’re predominantly centered on health-coaching with a mental health focus, such as mood management and how to quit smoking.

“There was significant demand for mobile applications that provided a connection to our back-end legacy IT systems, in particular to our electronic health record,” however, Evans said.

Based on that demand, the VA now provides a Summary of Care app that enables users to access their EHR and will soon include Mobile Blue Button, which lets veterans securely access their health information and generate a PDF of it that they can share with health providers outside VA.

In a 2012 field test of the app suite that includes those two, VA found that users in rural areas were more likely to use the apps and that younger veterans were more apt to use them than older caregivers.

In the works now is Annie, a two-way disease management text messaging program that is named after Annie G. Fox, the first woman to receive the Purple Heart for combat. Patients can get texts reminding them to check their blood pressure and text back the numbers, or they can receive blanket announcements, such as “Flu shots are available.” Providers can also

VA MOBILE HEALTH PROVIDER PROGRAM
Like many agencies, the Veterans Affairs Department recognizes that many of its constituents can benefit from accessing services through mobile apps. But the VA also realizes that its staff can benefit as well.

As part of its Mobile Health program, the department plans to provide mobile apps to its health providers. The plan includes:

- Distributing up to 11,000 mobile devices (tablets) at 18 VA Medical Centers for use in clinical care. The first phase of the program will focus on commercial apps.
- Providing a mobile device service contract for help desk, break/fix and provisioning services.
message one another.

VA is now testing provider-facing apps at 18 medical centers by distributing 11,000 tablets, 85 percent of which are iPad Minis, to see what use cases benefit from mobility and how the devices improve efficiency. For context on the scope of the pilot, the Veterans Health Administration, which handles VA’s medical care, has 208,000 employees.

The department is testing commercial apps and department-developed apps that connect to backend systems. The most important app in this suite is the Patient Viewer, Evans said. It lets clinicians review data and enter notes and orders. Another is the immunization app. VA gives 20,000 to 30,000 flu vaccines in the fall at a typical center, he said, so this app wraps it up as a unified workflow, checking patients in, asking pre-screening questions, recording the lot number of the vaccine and more.

“The excitement of providers as they’ve been exploring mobility in their daily work has been refreshing to see,” Evans said.

How VMware Can Help
In addition to navigating health exchange and mobility, the health care industry also is in flux because of mergers and acquisitions of health care organizations and insurance companies and client and application platforms that continue to change, said Ryan Williams, cloud management specialist at VMware Public Sector. VMware is a Palo Alto, Calif.-based software company that provides cloud and virtualization software and services.

“All of these different things are really impacting the health care industry head on and sort of forcing its hand to go toward a cloud-based solution,” Williams said.

And the best cloud option is a hybrid one, he added. “There is no organization that I am talking to today that has any intention of taking everything lock, stock and barrel inside their data centers. They’re going to push it out to a public resource.”

Key capabilities of VMware cloud offerings include self-service, automated request and workflow approvals, compliance with federal requirements such as the Health Insurance Portability and Accountability Act, automated operations management and disaster recovery, pooling of abstracted resources, and extensibility. To maximize security and compliance, VMware encrypts data at the bit layer, Williams added.

And when it comes to mobility, health care is primed for it, said James Millington, group product line marketing manager at VMware.

“In other industries, mobility is about getting access to information from the road, but in health care, it’s about the constant movement around the environment,” Millington said. “Health care IT has got to help and not hinder the providers.”

It also has to help patients. “If the users say, ‘That’s too difficult. I’m not going to do it,’ multi-hundred-million-dollar projects will fail,” he said. “It may be the finest-looking IT implementation in the world, but it’s going to fail.”

To that end, VMware’s mantra for ensuring ease of use is a “tap, turn and treat” workflow, meaning a provider taps on the device and then turns to treat the patient without having to spend a long time reaccessing applications.

VMware vCloud for Healthcare, the company’s virtualization and server consolidation solution, is built on a point-of-care architecture that ensures that patient information is always available (AlwaysOn Point of Care). On top of this, the single workspace works with all applications and devices, whether they’re Windows-based apps and desktops or native tablet applications.

“The paper chart really set the bar high in terms of usability,” Millington said, but now technology can match that.