Few healthcare organizations dispute the importance of using EHRs to track patient health over time to improve quality of care and reduce costs. The missing link, however, is a practitioner’s ability to access and use these records across the spectrum of care. In other words, not only does a practitioner need a comprehensive patient record, but medical professionals in different offices must be able to access the data to make quality-related healthcare reform efforts such as patient-centered medical homes and accountable care organizations a success.

One of the key stumbling blocks is health information technology (HIT) interoperability, say industry experts including Lt. Col. Michael J. Stone, USAF, MSC, FACMPE. Stone cites interoperability as a hurdle to quality care in his ACMPE Fellow paper “Global electronic health record interoperability.”

BRIDGING THE GAP TO QUALITY CARE WITH TECHNOLOGY
“A clinician, practicing based on the information generated through an EHR, has access to an unprecedented amount of clinical data,” Stone writes. “This benefit is further magnified when organizations practice based on an interoperable EHR. This ensures that information is easily accessible and rapidly available to clinicians at different parent organizations through best practices in informatics and software engineering. … All of this drives a potential reduction in cost due to improved accuracy, new data mining capability, the elimination of rework and errors, and a decrease in misplaced paper documents in transit from one provider to another.”

But access is not yet universal. Until it is, and until data are consistent, technologies that bridge the gap can help industry members provide high-quality patient care.

The HIT community is working toward adoption of interoperability standards to meet meaningful use and quality measures, which helps expedite the process. Yet slow adoption rates, incompatible data and outdated platforms in healthcare sectors reinforce the need for health information exchanges (HIEs), platforms intended to “build capacity for exchanging health information across the healthcare systems within and across states to increase connectivity and enable patient-centric information flow to improve the quality and efficiency of care.”

HIEs are one of the groups that offer bridge technologies — software systems that collect data from computers in hospitals, labs and radiology groups (called legacy systems in technology circles); collate the data; and translate it into current information technology standards that can be used by different technology platforms.

And the concept is taking hold, according to a 2011 HIE survey, which indicates that at least 255 communities are using the platforms to “focus on the secure exchange of health data to improve health and outcomes for patients.”

From a group perspective, EHR use is on the rise. In 2011, 57 percent of office-based physicians used EHRs, with use ranging from 40 percent in Louisiana to 84 percent in North Dakota, according to the National Center for Health Statistics.

And while an increase in EHR use is good news, the following data issues still need to be addressed to ensure success of quality management programs:

- **Data breadth.** Every provider involved in the continuum of care must report data to ensure sufficient coverage.
- **Data depth.** The types of data and collection methods must be consistent for each care provider to ensure that the same measure can be queried across all providers.
- **Data encoding.** Data collected from multiple care providers must be encoded using the same standards so that reports correlate results between providers with consistency.
- **Data exchange automation.** Clinicians should not have to perform any manual steps to ensure that data are properly reported or published to the community, HIE or state medical registry.

The concept of comprehensive patient records and interoperable healthcare information technology standards are not new. One of the first standards was created in 1987 by Health Level Seven (HL7), a not-for-profit standards organization in Ann Arbor, Mich., to improve the way computer systems share information in any healthcare organization. The standard was focused on small, transactional data to synchronize multiple healthcare data systems in an acute care setting.

**Interoperability**
And while network systems may understand HL7 language, most require customization to map data between systems, a costly and time-consuming process. And if no system has a complete contextual view of the patient and his or her visit, caregivers must consult multiple information systems to get a holistic view of patients in the caregiver’s organization.

The Continuity of Care Document (CCD) standard established by HL7 fills some data gaps, according to industry members. It provides a standard location for all clinical data in a record, with free-text clinical notations and encoded clinical data so that it can be read by people and computers.

But CCDs alone don’t fulfill all data needs. While it provides a placeholder for data, there are still depth and breadth issues. It’s still possible to receive detailed data from one provider and precious little from another. And CCDs don’t enforce any particular coding standard for allergies, medications and lab results.

Data standards such as CCD are only one piece of the interoperability puzzle. We still have to find a way to store the records in a central repository so that all practices have equal and standardized access to patient records. The Integrating the Healthcare Enterprise (IHE) established the “XDS” (Cross-Enterprise Document Sharing) and “XCA” (Cross-Community Access) standards that allow communities of caregivers to share medical records.

While data standards provide a technical means toward interoperability, product support for these standards is still new, and some products need “bridge technologies” to help link the HL7 world with the interoperability world.

Getting from here to there

Bridge technologies seek to address the following gaps in data depth, breadth, encoding and automation:

- Collection and collation of traditional HL7 transactions from legacy and acute care systems labs
- Data scrubbing and semantic cleansing for uniform encoding of medications and labs to ensure encoding standards for quality measures and reporting
- CCD generation services providing standard CCD documents for data collected and scrubbed from HL7 to ensure data consistency and depth issues so that reporting coverage is consistent
- Receipt and display of CCD documents from IHE communities to provide uniformity of access for providers without EHR systems
- Publication of CCD documents to the IHE community to automate data sharing and ensure breadth of data
- Communication between providers
- Data transfer and receipt from communities

As the HIT industry matures, bridge technologies such as HIEs are integral to aggregating and distributing the data necessary for lifetime patient records to assist in achieving improved patient outcomes and reduced costs.

And patients will be in the driver’s seat, according to Stone. “Patients will demand outcomes that are driven by interoperable technology,” he writes. “They will demand patient-centered care. The EHR that is fully interoperable among all providers who provide them care is the best way to enable that type of focused treatment.”

Notes:
5. Background on HL7 available at hl7.org/.