CLINICAL CONNECTIVITY

Best Practices Guide
INTRODUCTION
INTRODUCTION

What is Clinical Connectivity?

The healthcare industry is sitting at the precipice of a transformative movement that has the potential to redefine care delivery for the better. As federal and private marketplace initiatives unfold to advance healthcare’s Triple Aim of enhancing the patient experience, improving population health and lowering costs, a foundational component to success is a healthcare organization’s ability to access and share clinical data.

Clinical connectivity — or system interoperability — is all about unlocking patient data to drive proactive care delivery and better outcomes. Health IT systems must be able to communicate with each other to support accurate, efficient and meaningful exchange of clinical data.

The Institute for Electrical and Electronics Engineering defines interoperability as “the ability of two or more systems to exchange information and the ability of those systems to use that information.”1 On the healthcare stage, the Health Information and Management Systems Society (HIMSS) currently defines three levels2 of interoperability as it relates to advancing data exchange:

- Foundational, or basic, interoperability allows data exchange without requiring IT systems to interpret data. This generally means that two systems can exchange data, but a person is needed to interpret that information and what it means to a patient’s care.
- Structural, or intermediate, interoperability defines syntax of the data exchange, allowing systems to interpret data at the data field level, requiring less human interpretation. Much of the data that is received can be reconciled into a patient’s healthcare record without extensive manual effort or data entry, enabling faster, more responsive and efficient care.
- Semantic, or advanced, interoperability — the highest level — supports meaningful exchange of information among disparate systems. In the context of healthcare, this means that providers will have the most relevant clinical data to a patient’s care depending on the setting of care and patient’s condition.

As the industry moves into the more advanced stages of meaningful use (MU) and other national initiatives, healthcare organizations will need to achieve advanced interoperability to succeed in the quality-driven healthcare landscape.

Three icons will be used next to section takeaways, indicating the target readership for that particular bullet.

1https://www.ieee.org/education_careers/education/standards/standards_glossary.html
2http://www.himss.org/library/interoperability-standards/what-is?navItemNumber=17333
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YOUR PRACTICE, YOUR PATIENTS
Healthcare’s Interoperability Quest and Why It’s Important to You

WHY IS THIS IMPORTANT TO THE AVERAGE PROVIDER? WHAT’S IN IT FOR YOU?

The industry has long recognized that the exchange of electronic clinical data is key to improving practice efficiency and patient outcomes. MU is a direct outgrowth of this conclusion, as is the more recent uptick in national and regulatory focus on advancing clinical connectivity. For instance, The Office of the National Coordinator (ONC) for Health Information Technology’s roadmap aims to enable the majority of individuals and providers to send, receive, find and use a common set of electronic clinical information at the national level by the end of 2017.

Focusing on three critical pathways, the roadmap aims to reach this goal by: 1) harmonizing industry standards; 2) motivating through incentives; 3) creating a trusted environment.

Few in the industry would argue the benefits and opportunities of clinical connectivity. When information sharing is elevated, you, as a provider, have the ability to:

• Transfer information between systems with a single touch in your EHR, rather than scanning and faxing documents.
• Seamlessly exchange data with other providers, eliminating reliance on paper.
• Improve accuracy and patient identification.
• Streamline workflows, saving hours of labor associated with phone calls and filling out information by hand.
• Enhance patient experience and access to timelier, accurate information for care delivery.
• Capture government and private incentives and avoid financial penalties.
• Increase capacity and ability to support population health initiatives, leading to better realization of federal incentives and improvements to the bottom line. Especially with population health, a high level of clinical connectivity is needed as patients with complex conditions navigate multiple providers.

Despite the benefits clinical connectivity offers, many practices report a low level of connectivity with other healthcare organizations.

How Clinical Connectivity Fits Into Your Practice

The purpose of this guide is to introduce you to the opportunities of clinical connectivity and address knowledge gaps that exist within the provider community. You will be introduced to evolving industry standards, key industry initiatives and important aspects of the interoperability movement to better consider how to fully leverage the clinical and financial benefits. Additionally, the guide provides real examples of how physician practices are using connectivity functions to improve data liquidity and connected care coordination.

Throughout this guide we will also emphasize how each type of clinical connection can fit into your overall connectivity roadmap, focusing on the level of effort and technology required to implement that connectivity, as well as the clinical and financial benefits to your organization. When evaluating what clinical connections your practice needs, it’s important to consider:

• Cost, time and level of technical sophistication to develop and implement
  o Practices should consider the level of effort required to use and act on the clinical information you receive,

“As we look at the ever-changing healthcare landscape, we have to be as aggressive as we can. Interoperability helps us prepare for health information exchanges and comply with meaningful use, but it’s also the best standard of care for the patient.”

—Mona S. Engle, RN
CEO, Doctors May Grant Associates
with basic interoperability representing the highest amount of effort and advanced interoperability representing the lowest amount of effort

• Who’s in your medical neighborhood, and how do they connect?
• Benefits to your organization
  - Clinical/financial benefits
  - Program benefits as they relate to initiatives such as MU, the Physician Quality Reporting Systems [PQRS] and the patient-centered medical home [PCMH]

After reading this guide, you should be able to measure what connections you can and should implement now, and how to grow your clinical IT network to best benefit your practice’s needs.

Greenway Exchange

Industry standards for connectivity in and of themselves are useless; they must be configured to work with electronic healthcare records [EHRs] and other third-party systems to begin transforming clinical care.

Traditionally, EHR vendors have achieved clinical connectivity through point-to-point connections. Each of these point-to-point connections required separate development, implementation, and technical and regulatory maintenance. The more organizations a provider wanted to connect to, the more costly, time-consuming and technically complex their network became. Realizing that this model was unsustainable and too costly for providers to achieve advanced clinical connectivity, Greenway Health developed Greenway Exchange, a patented hub-and-spoke model.

Greenway Exchange acts as a central exchange engine, standardizing external connections to Greenway Health customers through more than 13,000 interfaces. Rather than connecting each individual practice’s systems to each other, we connect external entities to Greenway Exchange, which shares a connection to all of our customers. This framework connecting 1,110 vendors allows us to lower implementation times, development costs and associated maintenance costs. The 12 million messages delivered by Greenway Exchange each month allow providers to achieve the level of connectivity they need within a reasonable time, at a price that they can afford.

Integrated transactions within Greenway Exchange currently include patient demographics, patient insurance, charges, lab results and orders, microbiology reports, summaries of care, transcriptions and radiology reports. Providers can connect with a variety of different entities to share these data elements including HIEs, state immunization registries, hospitals, laboratories, other health systems and ambulatory providers, national information exchange initiatives, pharmacies and devices such as EKGs.

By meeting the Department of Health and Human Services’ “Interconnecting Clinicians” goals of fostering regional collaborations, developing a national health information network and coordinating federal health information systems, Greenway Exchange exemplifies a forward-thinking effort to support national health IT objectives. In essence, it allows providers to achieve faster clinical connectivity connections at a lower cost than what could be achieved independently.

On a scale of 1-5

Provider organizations rate the importance of sharing clinical data for the care of patients at a 4.25/5.

But how providers connect today:

- 73% use fax
- 43% use paper mail
- 35% use the patient
- 85% want to send clinical documents when referring patients

48% of the market would switch EHR providers for better connectivity with their providers.

And

41% would switch for better connectivity to hospitals.
INDUSTRY STANDARDS SUPPORTING CLINICAL CONNECTIVITY
INDUSTRY STANDARDS SUPPORTING CLINICAL CONNECTIVITY

Why Do We Need Standards?

Historically, EHR vendors served distinct constituents in a diverse marketplace with diverse needs. As the systems and solutions serving those constituents matured, EHR designs became increasingly varied. While MU incentives are accomplishing the goals of driving adoption and use of EHRs, they developed to serve different constituents with different needs, leading to disparate technical variations. The end result is that many EHRs lacked functionality to support interoperability and the bigger picture of data exchange, leaving providers frustrated.

Health Level Seven® (HL7), a key initiative to implement health IT information sharing standards, established in 1987, has developed standards of increasing complexity to accommodate healthcare providers increased need for clinical connectivity, driven by policy initiatives and the need to reduce the overall cost of care while improving quality.

HL7 is a nonprofit organization dedicated to developing a framework and universal standards for the exchange, integration and retrieval of digital clinical information. Comprised of 2,300 members including 500 corporations who all contribute to standards development, HL7 provides a framework for EHR interoperability by establishing discrete data fields for the exchange of common patient information. In essence, this structure helps ensure health IT systems can communicate.

WHY DISCRETE FIELDS ARE IMPORTANT TO PRACTICES

Discrete, or structured content, is tagged or coded data that resides in a fixed field. This way, it can be easily located, identified and understood, simplifying the process of integrating content into existing systems and sharing between disparate systems. In contrast, unstructured content, such as free text, often results in irregularities and ambiguities that make it harder to interpret.

Takeaways

- Healthcare is made up of diverse constituents who have diverse needs. HL7 developed standards of varying levels of complexity to best serve providers. Because of how common some are, they’re relatively easy for practices to implement.

On a scale of 1-5, provider organizations say widespread adoption of healthcare interoperability standards is important at a 4.05
Each standard or family of standards is represented by a working group that develops and refines standards as HL7 evolves. Today, HL7 v2 is by far the most common version in use — widely used by most EHRs.

Providers, hospitals and other stakeholders can exchange certain types of patient information using data sets that are built on HL7 standards. Message types under the HL7 umbrella include patient administration (ADTs or admit-discharge-transfer), orders (ORMS), results (ORUs), charges (DFTs), scheduling (SIUs) and immunizations (VXUs).

SUMMARY OF CARE DOCUMENTS

As a foundation for health information exchange (HIE), standardized summary of care templates were established to promote information sharing with the broader patient health record in mind. These documents include a snapshot of a patient’s health record, allowing select information to be transferred for continuity of care.

Addressing issues with former clinical care summary formats, MU Stage 2 selected the Consolidated Clinical Document Architecture (C-CDA) as the required standard, a solution developed by HL7 in cooperation with the ONC. C-CDA is a complete set of tools to standardize the content and structure of clinical care summaries.

HOW HL7 FITS IN YOUR PRACTICE

• Cost, time and level of technical sophistication to develop and implement
  • Because of HL7’s history, certain messages require a relatively low level of effort and cost to implement and can be done early in a clinical connectivity plan. Message fields like labs and demographics are discrete, meaning they can show up in the EHR in a provider’s day-to-day work without manual effort entering information into an EHR.

• Who’s in your medical neighborhood and how they connect
  • Almost all major EHR vendors use HL7 standards, meaning that the hospitals, specialists and other providers you want to connect to are likely using them too.

• Benefits to your organization
  • Elimination of fax, paper or hand delivery for routine documents that may be sent out hundreds of times a day, like lab orders
  • Reduced patient misidentification and increased responsiveness of care

Greenway Exchange has over 7,000 HL7 interfaces
Required for participation in programs like meaningful use and to avoid penalties

Integrating the Healthcare Enterprise (IHE)

Established in 1998, IHE International is a standards organization that brings together industry stakeholders to improve the sharing of health information. The organization promotes the coordinated use of established standards such as DICOM and HL7 to optimize patient care. A worldwide initiative driving the interoperability of health IT systems, IHE is comprised of 700 members in 45 countries and covers 13 domains of clinical and operational expertise. Whereas organizations such as HL7 create standards, IHE focuses on creating and examining protocols and use case scenarios for implementation.

The benefits of IHE standards include:

- Safety through reduction of medical errors
- Savings through lower implementation costs and more efficient workflow
- Satisfaction through more informed medical decisions

IHE works to solve clinical connectivity problems through collaboration by: 1) identifying the issue; 2) defining and documenting integration requirements and identification standards; and 3) testing at Connectathon, a high-profile industry event that showcases vendors testing how they can make data flow between their systems.

IHE’s 2020 Vision, designed to build a more robust organization and expand its influence, aims to:

- Broaden stakeholder engagement
- Increase awareness and adoption of IHE profiles
- Strengthen support for IHE members, committees and international deployment organizations
- Broaden testing services to improve product and deployment successes
- Enhance the organization’s independence, governance and capacity

How IHE Fits in Your Practice

By testing theories and new ways to connect with each other, vendors are able to reduce implementation times and develop practical connectivity. Absent this kind of cooperation, it is possible that connecting systems would be much more expensive because interoperability still requires manual effort since the systems are still disparate.

Greenway Exchange

Want to learn more about how Greenway Health and other major vendors work together to bring their customers the clinical connectivity they need? Check out this Greenway Health webinar at [www.greenwayhealth.com/webinar/partnerships-for-clinical-connectivity-today-and-tomorrow/](http://www.greenwayhealth.com/webinar/partnerships-for-clinical-connectivity-today-and-tomorrow/), in which representatives from Greenway Health, Epic and Cerner discussed solving connectivity problems at the point of care, the power of the vendor network and current and ongoing technical innovation.

DIRECT

The DIRECT Project is another key initiative, enabling providers to send secure messages to patients in a manner similar to email. DIRECT allows providers to send electronic, encrypted messages that contain HIPAA-covered protected health information (PHI), such as a summary of care document.

To attest for MU, practices must meet the transition of care requirement and also have patients view, download or transmit their electronic healthcare record. As the industry is increasingly focused on patient experience and efficiency, direct electronic communications with patients is critical to future positioning for providers. For example, a provider can share a patient visit’s summary of care to make sure they both know what medications the patient is on and what allergies they have.

Patient engagement is also an important component of population health strategies, requiring patient-provider collaboration and improved access.

How DIRECT Fits in Your Practice

- Cost, time and level of technical sophistication to develop and implement
  DIRECT is a relatively easy way to get providers engaged with clinical connectivity. It uses the same established exchange protocols to ensure you can securely send clinical information through a commonly used communication
Takeaways

- HIEs allow a community of providers to share clinical information. They are relatively advanced, and the cost and time of implementation can vary. Evaluate who is in your medical neighborhood to see if an HIE is right for you.

- Who’s in your medical neighborhood and how they connect
  - When evaluating whether DIRECT is right for you, ask around your major partners and referral sources to see who is using DIRECT. If hospitals you accept patients from, or other specialists you refer to use DIRECT, that might be the best option for you. If not, you may want to look at a summary of care interfaces directly between the two systems.

- Benefits to your organization
  - Electronic summaries of care improve accuracy and prevent patient misidentification by eliminating incomplete handwritten or faxed records. Patients benefit from elevated care delivery that is designed with the full patient picture in mind, minimizing the potential for adverse events and improving outcomes.

Practices can use DIRECT to meet MU Stage 2 requirements governing transmissions of summary of care records for transitions of care, providing an electronic summary of care record and conducting an electronic summary of care exchange with a recipient using a different EHR.

GREENWAY EXCHANGE
By supporting interfaces with DIRECT, Greenway Exchange positions providers for success in meeting MU transition of care and patient communication requirements. It is an easy way for practices to lay a foundation for the collaborative, coordinated care needed to support population health and other high-level quality initiatives.

Health Information Exchange (HIE)

HIEs provide the foundation for information exchange among organizations in a region, community or health system. These entities are either centralized (storing all data in a single location) or federated (maintaining data in multiple locations where is it queried by the HIE).

- 45% want to connect to a private HIE
- 44% want to connect to a state HIE
- 34% want to connect to a regional HIE
- 30% want to connect to a city HIE
- 27% want to connect to a national HIE
Fundamentally, HIEs are comprised of a master patient index (MPI) and repository. The function of the MPI is to match patients to the records sourced from all of the HIEs connections, and the repository exists to store patient information. As a key national initiative working in tandem with accountable care models and Triple Aim initiatives, HIEs rely on HL7 standards as a foundation for data exchange.

**SAMPLE HIES GREENWAY EXCHANGE CONNECTS TO:**

<table>
<thead>
<tr>
<th>Indiana HIE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Humana HIE</td>
</tr>
<tr>
<td>Atlantic Coast</td>
</tr>
<tr>
<td>Emory Healthcare HIE+</td>
</tr>
<tr>
<td>HIXNY — New York State HIE</td>
</tr>
</tbody>
</table>

**HOW HIES FIT IN YOUR PRACTICE**

- Cost, time and level of technical sophistication to develop and implement
  - HIEs can be advanced and are able to exchange many kinds of messages, including basic HL7 messages and summaries of care. The cost and difficulty associated with connecting to an HIE can vary based on the vendor used and the HIE itself.
- Who’s in your medical neighborhood and how they connect
  - Practices should consider the other healthcare organizations your patients visit and see if any are participating in a common HIE. Providers will also want to be sure to see if any local hospitals that discharge patients to a practice have their own HIE.
- Benefits to your organization
  - Joining an HIE can produce many advantages for providers, such as improved care coordination and reduced overhead, made possible through digital interfaces. For instance, HIEs assist providers with population health initiatives by providing greater insight into the full picture of a patient’s condition. Also, when physician practices can obtain needed information electronically, overhead is naturally reduced by eliminating paper and incorporating external clinical information into a single chart.

Charleston Internal Medicine is an internal medicine practice in West Virginia that participates in Humana’s value-based contract, and must report on quality measures every month. By interfacing directly with Humana’s HIE, Charleston Internal Medicine is able to auto-submit summaries of care that contain the metrics required for their quality measure reports.

“Prior to interfacing with Humana, providers had to take additional documentation steps for each Humana patient, which took between 60-90 seconds for each patient in the program. Today the information is submitted automatically through the interface, improving our providers’ workflows. And the implementation of the Humana interface was very smooth and efficient”

—Terry Coleman
Practice Administrator, Charleston Internal Medicine

For example, the Indiana Health Information Exchange (IHIE) is the nation’s largest regional HIE. By transferring information from hospitals, labs, cardiologists and pharmacies to its Docs4Docs service, IHIE disperses needed information to providers within its network to ensure health information travels with patients no matter where they are.

**GREENWAY EXCHANGE**

Greenway Exchange places providers on the cutting edge of the HIE market by connecting primary care practices, hospitals systems, academic centers and specialty practices, such as neurology and OB-GYN, to IHIE for the exchange of critical patient data such as lab results, radiology results and transcription.
Fast Healthcare Interoperability Resources (FHIR): the Future and What It Means for You

The latest standard to be developed is Fast Healthcare Interoperability Resources (FHIR), defined as a “next-generation standards framework that leverages the latest web standards and applies a tight focus on implementation.” More versatile than previous versions of HL7, the standard “can be applied to mobile devices, web-based applications, cloud communications and EHR data sharing using modular components.” It represents semantic or advanced interoperability — giving providers access to the most actionable and digestible data relevant to them.

HOW FHIR FITS IN YOUR PRACTICE

Foundationally, FHIR is an attempt to take the overly-complex HL7 v3 standard and blend it with the best features of HL7 v2 and CDA, while leveraging the latest web service technologies and application programming interfaces (APIs). Using APIs will enable provider organizations to move clinical information across systems faster and with fewer hiccups. It also seeks to standardize much of the indiscrete data in C-CDAs, so it can be sent to a provider at the point of care without manual data entry or interpretation. This framework also increases its use in running analytics, foundational to population health.

FHIR proponents suggest it represents a significant advance in accessing and delivering data while offering enormous flexibility. In recognition of this potential, the Argonaut Project was launched on the national stage in late 2014 to accelerate the development and adoption of FHIR.

Additional Resources

Industry standards supporting clinical connectivity

- If you want to learn more about HL7, visit their website at www.hl7.org
- If you’d like to see how FHIR implements standards, check out their homepage at www.hl7.org/implement/standards/fhir/
- To learn more about Integrating the Healthcare Enterprise (IHE), visit their webpage at www.ihe.net/
- Do you want to learn more about health information exchange? Visit www.healthit.gov/providers-professionals/health-information-exchange/what-hie
- If you want to know more about Direct, be sure to check out http://directproject.org/
STANDARDS ORGANIZATIONS

Basic/foundational connectivity

Intermediate/structural

Advanced/semantic

HIE

Direct

FHIR

TYPES OF MESSAGES

Immunizations

Payer Interfaces

Basic/foundational connectivity

Intermediate/structural

Advanced/semantic

Demographics/orders/scheduling

C-CDAs
TYPES OF CLINICAL CONNECTIONS
After gaining a basic understanding of why and how industry standards are used, it’s important for providers to grasp the big-picture benefits of deploying and implementing clinical connectivity connections based on these standards. This section provides an overview of common clinical connections and the clinical and financial benefits that can be realized.

The positive impacts of clinical connectivity can be felt on all industry levels. From a global perspective, clinical connectivity enables true transparency across the continuum, delivering a complete patient picture to enable proactive, responsive and seamless care. It also offers opportunities for large-scale data warehousing and analytics initiatives that were not possible in the past, opening doors to identify new industry best practices and medical breakthroughs.

On an individual provider level, clinical connectivity improves operations and performance, elevating the outlook for success in the value-based healthcare climate. When providers leverage systems and strategies to support HIE, the advantages come in the form of streamlined workflows, improved patient experience and the enhanced bottom line.

Part of a local value-based program similar to an ACO, South Tabor is currently exchanging information with external stakeholders including Adventist Medical Center of Portland, LABDAQ® Laboratory Information System and the Oregon Immunization Registry [abbreviated as ALERTIIS]. By deploying an infrastructure to support clinical connectivity, the organization is realizing a host of benefits, including:

- Streamlined workflows through the elimination of time-consuming processes associated with faxing and hand delivering radiology reports
- Enhanced care delivery through the availability of timely, accurate information, allowing clinicians to respond to patient conditions faster and minimizing the potential for error
- Compliance with MU core measures that require vaccinations to be sent to the Oregon Immunization Registry

“Clinical connectivity reduces manual processes and improves the patient experience. For example, many times we wouldn’t be aware of gaps in documentation. It’d take sometimes one to two months for it to cross our desks. Now we’re alerted to it almost immediately. In today’s age, connecting to the right organizations is key to healthcare. You can’t live without it, and without it, you’re setting yourself up for a hard fall. It’s like practicing medicine without a stethoscope.”

—Jason Steeprow
COO, South Tabor Family Practice

Greenway Exchange in action
Oregon-based South Tabor Family Practice sees more than 100 patients daily and uses a number of clinical connectivity offerings through Greenway Exchange to address information sharing needs outside of its four walls. Specifically, the 12-provider practice is leveraging interfaces for inbound and outbound demographics, inbound lab results, outbound orders, DIRECT messaging, inbound transcription reports, outbound CCD and inbound radiology reports.

HL7 Messages — Intermediate Clinical Connectivity

COST, TIME AND LEVEL OF TECHNICAL SOPHISTICATION TO DEVELOP AND IMPLEMENT

HL7 messages are relatively semantic, can be sent without manual data entry and can be implemented in a relatively small timeframe. Providers will need to evaluate who receives the most orders and results from their practice, existing referral relationships and whether an existing vendor can exchange these data types of messages with those healthcare organizations.
PATIENT DEMOGRAPHICS

The problem
The healthcare industry has long been plagued by registration and duplicate record issues that lead to misidentification of patients when transitioning between levels of care or between providers. This ongoing challenge leads to a host of potential issues including contraindications, missed care opportunities, lack of information and redundant treatments.

The solution
An electronic message containing a patient’s name, location, address, phone number, gender and other key information lays the foundation necessary for accuracy.

Benefits
When accurate patient information is captured electronically, the potential for error in interchange between stakeholders is minimized. Providers are able to avoid patient misidentification mishaps, which can lead to errors, dangerous reactions to medication, inappropriate treatment and other adverse events.

A foundation of HIE for sharing patient demographics streamlines workflows by eliminating manual and repetitive processes for recording demographics. Ultimately, providers can often reduce time associated with capturing this information to 3-5 minutes per patient.

ORDERS/RESULTS

The problem
Ambulatory practices engage in large volumes of lab orders on a daily basis. When manual processes are employed, these tasks require a massive amount of paper and fax resources. In fact, the workload can be so high that some practices have hired people to be “runners” to specifically address this issue.

The solution
Interfaces supporting electronic messaging by providers to send requests for lab tests and receive results electronically can deliver significant workflow and care delivery benefits to providers.

Benefits
The process of reconciling lab results against original paper orders in a manual environment is also resource intensive and error-prone, often requiring a dedicated employee. When physician practices lack clinical connectivity with other systems, the time associated with receiving lab results is also protracted, leading to delays coordinating with other practices to schedule patients for the care they need.

Over 400 radiology imaging interfaces
69% of Greenway Exchange users have a lab interface
**Benefits**

When orders and results are received immediately, care delivery timeframes are accelerated, improving responsiveness to patients’ needs and minimizing prolonged periods of waiting that could result in the worsening of conditions or an adverse event. In essence, these interfaces enable providers to more quickly diagnose and prescribe treatment therapies.

Clinical connectivity interfaces for orders and results reduce overhead by eliminating the need for paper, faxing or delivering orders. This streamlined approach often eliminates use and management of hundreds of documents per day as well as the time associated with filling out orders by hand. Overall, this approach can reduce time spent on an order to a mere 3-5 minutes, improving staff efficiency and, in some instances, eliminating the cost of a full-time equivalent. Costs associated with couriers are also eliminated.

“Before using an labs and imaging interfaces through Greenway Exchange with our primary hospital for referrals for results and imaging, we had to rely on analog faxes. The data was indiscrete, and came in delayed. Now this information comes over almost instantaneously.”

—Jason Steeprow
COO, South Tabor

**Prime Suite and Greenway Exchange help Colonial Healthcare’s clinical teams coordinate care after a patient leaves the office.**

“The orders tracking feature allows us to monitor which orders and referrals are fulfilled, both in-house and externally.”

—Lissa Lara
CEO, Colonial Healthcare

**SCHEDULING**

**The problem**

Equally challenging is the inability of patients to follow or understand post-discharge instructions. When patient information is incomplete, primary care doctors lack critical information regarding instructions and ongoing patient issues, minimizing their effectiveness in helping patients with care plan adherence.

**The solution**

Scheduling interfaces provide electronic messaging to a practice that contains important appointment information and details when and why an appointment is made. The information also alerts providers to scheduling changes or cancellations.

**Benefits**

Timely delivery of complete and accurate patient information increases care coordination and transparency. Patients receive the care they need at the right time, and scheduling becomes more proactive, ensuring follow-through with referrals and care plans.

When scheduling is tracked electronically and captures critical patient information, providers have access to patient background, eliminating the need to track reference laboratory in the area. Prior to using the interface, these orders were fulfilled by printing the order and giving it to the patient to take to the lab. Then the results were faxed back.

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Equally challenging is the inability of patients to follow or understand post-discharge instructions. When patient information is incomplete, primary care doctors lack critical information regarding instructions and ongoing patient issues, minimizing their effectiveness in helping patients with care plan adherence.

**The solution**

Scheduling interfaces provide electronic messaging to a practice that contains important appointment information and details when and why an appointment is made. The information also alerts providers to scheduling changes or cancellations.

**Benefits**

Timely delivery of complete and accurate patient information increases care coordination and transparency. Patients receive the care they need at the right time, and scheduling becomes more proactive, ensuring follow-through with referrals and care plans.

When scheduling is tracked electronically and captures critical patient information, providers have access to patient background, eliminating the need to track reference laboratory in the area. Prior to using the interface, these orders were fulfilled by printing the order and giving it to the patient to take to the lab. Then the results were faxed back.

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**Prime Suite and Greenway Exchange help Colonial Healthcare’s clinical teams coordinate care after a patient leaves the office.**

“The orders tracking feature allows us to monitor which orders and referrals are fulfilled, both in-house and externally.”

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down patient status with other providers and organizations. Without a scheduling interface for electronically exchanging information, providers must often rely on incomplete information provided by patients or must call referring providers and organizations to determine why the patient was scheduled in the first place.

Electronic interchange of scheduling information also ensures providers are able to capture a revenue-generating event by having the needed information at their fingertips.

IMMUNIZATIONS
The problem
In the past, immunization records could best be characterized as fragmented. Many patients received redundant vaccinations, particularly if a fire or other natural disaster destroyed the paper-based information. Exacerbating the problem, incomplete information often meant physician practices did not know if immunization gaps existed.

66% of providers are not connected to an immunization regist

In an effort to improve this outlook, MU requires practices to report immunizations and vaccinations to a statewide registry. Under the heightened expectations of today’s healthcare landscape, practices that are not linked up with a registry may be seen as undesirable to patients — or, specifically parents or caregivers — who want their vaccination history readily available online.

The solution
Electronic interfaces send vaccination records to immunization registries, simplifying compliance with MU requirements and improving tracking of immunization records.

Connected to over 35 immunization registries
Over 600 immunization interfaces

Takeaways
- Demographics, orders and scheduling help prevent patient misidentification and increase staff efficiency, while offering practices an easy way to start getting connected.
**SAMPLE GREENWAY REGISTRY CONNECTIVITY**

<table>
<thead>
<tr>
<th>FL SHOTS</th>
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<td>Texas IMMTRAC</td>
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**Benefits**

Access to the immunization registries enables patients to see their vaccination history and avoid duplicative immunizations or gaps in vaccination timelines.

Time-consuming manual processes associated with scanning and faxing immunization records to registries is eliminated and replaced with a simple push of a button. For many practices, this streamlined workflow reduces the hours associated with a full-time employee. Also, this foundation of HIE assists easy compliance with MU requirements for attestation.

**Greenway Exchange in action**

The Veranda is a multi-specialty practice representing OB-GYN, endocrinology, family medicine and pediatrics. Today it is an NCQA Level 3 Recognized patient-centered medical home that has seen over 37,000 patient visits to date.

"Meaningful use Stage 2 prompted us to connect to GRITS, Georgia’s statewide immunization registry. But it’s about more than that; it’s about improving the health of populations and patients by making immunization records more accessible. Before interfacing directly with the registry through Greenway Exchange, we submitted immunization records to registry by hand through a web portal, which was too time consuming."

—Nancy Brown

*Practice Administrator, The Veranda*

**SUMMARIES OF CARE**

**The problem**

Without a digital interface, practices exchange a patient’s chart or health record by fax, personal delivery or mail. These manual processes tend to be error-prone, leading to patient misidentification, contraindications and a lack of a complete patient picture to effectively coordinate care.

Providers seeing complex patients, such as diabetics who may have multiple physicians involved in their care, face challenges when information is incomplete. Often this situation results in redundant tests and improper treatments. The end result is cost inefficiency, less than optimal care delivery and poor positioning in the pay-for-performance environment. In today’s lean, quality-driven landscape, the overhead caused by all the paper and labor costs associated with manual processes is unacceptable.

**The solution**

An electronic interface that pulls a summary of a patient’s clinical information from an EHR ensures critical information such as procedures, allergies, medications and more are shared with stakeholders along the continuum.

Under Stage 2 MU, C-CDA summaries of care must include the common MU dataset comprised of:

- Patient name
- Sex
- Date of birth
- Race
- Ethnicity
- Preferred language
- Smoking status
- Problems
- Medications
- Medication allergies
- Laboratory tests
- Laboratory values/results
- Vital signs

Also included are care plan fields for goals and instructions, procedures and care team members. In some cases, requirements extend to diagnoses, immunizations, reason for referral and discharge instructions.
Benefits

A complete, accurate electronic summary of care prevents patient misidentification by eliminating incomplete handwritten or faxed records. Overall, this foundation of HIE improves the clarity of care, ensuring stakeholders along the continuum have the critical patient information needed to avoid contraindications, medication reactions and duplicative procedures.

As a requirement of MU, these types of interfaces lay the necessary foundation for electronic submission of summaries of care, ensuring providers can attest for incentives. Specifically, transmission of a summary of care record is required for more than 10 percent of transitions of care. MU also requires that five percent of patients view, download or transmit their healthcare record.

While complying with MU measures is a key benefit, summary of care interfaces also streamline processes by enabling digital transfer of care records and eliminating faxing, use of a courier or mailing hundreds of copied pages.

Greenway Exchange

The ability to exchange summaries of care with hospitals through HL7 interfaces for CCD and C-CDA is critical to attesting for MU and positioning for HIE expectations around the evolving quality-based healthcare landscape. Greenway Health is on the cutting edge of the HIE movement as the first to achieve Epic interoperability and become certified by Cerner. Greenway also extensively connects to MEDITECH and is a founding member of CommonWell Health Alliance, participates in Carequality, and became as the first ambulatory EHR vendor to onboard onto Project Sequoia’s eHealth Exchange.

To deliver optimal care, clinicians at Lancaster General Health, an Epic customer, needed easy access to prenatal records, and clinicians at Doctors May Grant Associates, a Greenway Health customer, needed to know went on in the hospital when patients returned for follow-up care.

“Now that the two systems can exchange summaries of care, we’re getting a good combined snapshot of the patient record.”

—Terri L. Rapp, M.D.

Doctors May Grant Associates
# Greenway Exchange Clinical Connectivity Snapshot

## EHR Connectivity

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INDUSTRY INITIATIVES: THE FUTURE OF CLINICAL CONNECTIVITY
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Greenway Health collaborates with major initiatives like the CommonWell Health Alliance, the Sequoia Project, eHealth Exchange and Carequality to ensure that its customers have access to cutting edge HIE technology movements today and in the future. Outlined in this section are industry initiatives that are increasing momentum with interoperability and clinical connectivity – and Greenway Health is helping to lead the charge.

"Greenway Health has been great to work with – it’s been very progressive in working to achieve the goal of interoperable patient records"

—Michael Ripchinski, M.D.
Chief Medical Officer, Lancaster General Health

CommonWell Health Alliance

**What it is**

The CommonWell Health Alliance is a federated nationwide network that aims to provide affordable and integrated clinical connectivity. Founding members of the organization include Greenway Health, Cerner, athenahealth, Allscripts, Evident, McKesson and Sunquest.

The goal of CommonWell is to make health data, including summaries of care, available to patients and providers regardless of the location. CommonWell services presently include a master patient index nationwide and a record locator service that enables you to find a patient’s information by querying one location.

**Takeaways**

- As clinical connectivity becomes more advanced, innovative partnerships seek to bring providers more affordable connections and break down barriers to data exchange.
“With a growing population that’s typically been seen in multiple hospitals, doctor’s offices and other care venues, integrating the CommonWell services with our Greenway Health solutions just made sense,” Brown continued. “As a PCMH, you can’t develop and execute a care plan if patients don’t even recall everywhere they’ve received care, let alone all of their medications, lab results and procedures. CommonWell is really enabling us to quickly gather all of the relevant patient records so we can better coordinate that care and deliver the best possible outcomes. This is really the future of healthcare, and I’m glad we’re participating in it, on the front lines.”

—Nancy Brown
Practice Administrator, The Veranda

Benefits

Most networks are regional, but patients are mobile and have many points of care. Covering 70 percent of the acute market, the CommonWell network will offer Greenway Health customers substantial access to hospital systems’ data on their patients, so they can provide informed care. The initiative also covers 24 percent of the ambulatory market.

The Sequoia Project

A nonprofit that supports health IT interoperability, The Sequoia Project (formerly Healtheeway) aims to provide public and private cooperation on clinical connectivity initiatives and support governance frameworks. Greenway Health was the first ambulatory data solution to join The Sequoia Project.

Founded by ONC as a public/private data exchange venture, the initiative is supported by leading industry groups including Epic, the American Medical Association and Kaiser Permanente, among others, and presently manages two initiatives:

EHEALTH EXCHANGE

What it is

eHealth Exchange is a nationwide network of federal and non-federal partners that uses a standardized approach to clinical connectivity. Currently, the initiative connects the Department of Defense, Veterans Affairs, and Health and Human Services departments of the U.S. government, along with thousands of other entities including health systems and HIES.

Benefits

Access to eHealth Exchange provides enterprise level exchange of summaries of care with major healthcare organizations like Kaiser Permanente and IT vendors like Epic.

Greenway Health advantage

Greenway Prime Suite customers will have access to CommonWell at no charge, enabling providers to access a complete picture of a patient’s health. Ultimately, HIE empowers better clinical and financial outcomes.

- $0
- Easy online enrollment
- Imported summaries of care can be reconciled to the patient’s chart through Prime Suite’s reconciliation functionality

Greenway Health advantage

Since January 2015, Greenway’s patented and centralized clinical data exchange platform has facilitated information exchange between such leading groups as Kaiser, Premise Health (formerly the Take Care division of Walgreens, which manages Intel’s worksite healthcare clinics) and Providence Health & Services. The first recognized ambulatory data solution on the eHealth Exchange, onboarding to the eHealth Exchange is available to Greenway Prime Suite customers.
GREENWAY BRINGS AMBULATORY CARE TO EHEALTH EXCHANGE

Since 2012, participation in eHealth Exchange has grown to include one-third of all U.S. hospitals and more than 17,000 large medical groups. While the more than 85 types of exchange participants range from federal agencies and university hospital systems to state and regional HIEs, one critical group was missing until January 2015 — self-contained ambulatory clinics and physician practices.

A patient-centered medical home approach to care coordination in Portland, Oregon recently helped close this loop. The patient care collaboration includes Providence Health & Services, the nation’s third-largest nonprofit health system; Kaiser Permanente, a health plan and integrated care system operating two hospitals and multiple clinics in the Portland area; and Intel Corporation, which established on-site employer clinics for its nearly 20,000 Portland-area employees and beneficiaries through Premise Health (a Greenway Health client).

In September 2014, Greenway Health became the first ambulatory information provider to have a solution recognized as a Validated System by the eHealth Exchange Product Testing Program. This significant milestone allows all of Greenway’s customers across the country, including Premise in Oregon, to connect with local and cross-country exchange partners for the purpose of providing treatment to patients. In Portland, this furthered the Premise Health/Intel locations’ ability to coordinate care with Providence and Kaiser Permanente for referrals, emergencies, hospitalizations and health plan reconciliation.

Premise Health also utilizes Greenway Health technology in other worksite clinics around the country, and by participating within the eHealth Exchange, our more than 70,000 other ambulatory providers can onboard onto the exchange. Eligible professionals can also use the exchange to meet the MU Stage 2 transitions of care/summary of care measure.

CAREQUALITY

What it is

An organization focused on facilitating agreement among diverse stakeholders to create a common interoperability framework, Carequality’s mission is to create a collective agreement that can connect networks to networks. The initiative will enable network members to connect disparate systems to each other seamlessly, much like the telecom industry accomplished for cell phone networks.

Benefits

Once matured, Carequality will enable data exchange between vendors who do not participate in the same network initiatives. For example, Cerner clients will be able to communicate with Epic clients and vice versa. Currently, the initiative reaches 30 percent of the acute market and 25 percent of the ambulatory market.

Additional Resources

- If you want to know more about the CommonWell Health alliance, visit their homepage at www.commonwellalliance.org/
- If you’re interested in the eHealth Exchange or Carequality, see what Project Sequoia has to say at http://sequoiaproject.org/
INTEROPERABILITY
AND POLICY
INTEROPERABILITY AND POLICY

ONC Roadmap

In early 2015, ONC issued its 10-year interoperability roadmap titled “Connecting Health and Care for the Nation: A Shared Nationwide Interoperability Roadmap.”

The roadmap focuses on five building blocks:

- Core technical standards and functions
- Certification in support of optimization and adoption of HIT products and services
- Privacy and security
- Supportive business, clinical, cultural and regulatory environments
- Rules of engagement and governance

Also outlined are 10 guiding principles of interoperability for health IT vendors and policymakers:

1) Build on existing health IT infrastructure  
2) Consider the current environment and support varying levels of expertise  
3) Protect privacy and security  
4) Maintain modularity so systems can evolve without being completely overhauled  
5) Empower individuals  
6) Leverage the market  
7) Consider scalability and universal access  
8) Recognize that one size does not fit all  
9) Simplify products and protocols  
10) Focus on value

Meaningful Use

As a focal point of national quality initiatives, MU is unfolding across the industry as a strategic effort to increase momentum with HIE. The initiative accomplishes this goal by progressively laying a foundation of attestation requirements for the collection, exchange and reporting of data using certified electronic health record technology (CEHRT).

Attestation requirements are met by complying with a series of objectives and patient thresholds. The following outlines key requirements impacting providers on their quest to attest for MU and mature HIE.

STAGE 1 MU

The first stage of the MU rollout was focused on basic data capture and sharing of information. Key clinical connectivity requirements impacting providers include providing:

- An e-copy of patient health information upon request
- A summary of care during 50 percent of transitions of care and referrals
STAGE 2 MU

The focus of Stage 2 is to move toward more advanced clinical processes including more rigorous HIE, increased requirements for e-prescribing and electronic transmission of patient care summaries, and increasing patient control of data. Key clinical connectivity requirements impacting providers include:

- Making health information available online to patients
- Electronically transmitting summary of care records
- Submitting electronic data to immunization registries
- Receiving lab results in EHR
- Performing medication reconciliations when receiving a patient from another setting of care

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*Penalties for non-participation

STAGE 3 MU

Stage 3 matures HIE to focus on improved outcomes, where data exchange is leveraged to enhance quality, safety and efficiency and effective patient engagement and population health strategies are employed. Key clinical connectivity requirements impacting providers include:

- Results of specialty consult requests returned to ordering provider
- Receiving provider requested and electronically submitted patient generated health information
- Perform medication reconciliations when receiving a patient from another setting of care
- Provide summaries of care during transitions of care
- Receiving patient’s immunization history from an immunization registry
- Report information to specialized registry
- Submit electronic reportable lab results to public health agencies
- Submit syndromic surveillance data to a public health agency
- Coordinate care across providers
- Use data for population health management
- Offer preventive care services
- Manage and reconcile medications with patients for more than 80 percent of care transitions
- Track lab tests and imaging tests until results are available (also a MU core requirement)
- Electronically order radiology orders and lab orders (also a MU menu requirement)
- Provide specialists or other providers in referral network an electronic summary of care for more than 50 percent of referrals

Patient-Centered Medical Home

The patient-centered medical home (PCMH) model is one of many initiatives designed specifically to improve quality of care and reduce costs. A program supported by the National Committee for Quality Assurance (NCQA), PCMHs are primary care practices that provide better-coordinated, more personalized care for improved health, while reducing costs. The intent is to reduce error, increase efficiency and foster a partnership between physician-led practices and patients. Incentive programs exist through local, state and public/private payer initiatives to reward practices that adopt the functions of a PCMH.

The 2014 certification requirements for PCMH require that practices:

- Coordinate care across providers
- Use data for population health management
- Offer preventive care services
- Manage and reconcile medications with patients for more than 80 percent of care transitions
- Track lab tests and imaging tests until results are available (also a MU core requirement)
- Electronically order radiology orders and lab orders (also a MU menu requirement)
- Provide specialists or other providers in referral network an electronic summary of care for more than 50 percent of referrals
• Identify patients with unplanned hospital admissions and ED visits (claims data, CCDA exchanges with hospitals), share that clinical information with hospitals/EDs, obtain discharge summaries from the hospital and exchange patient information with hospital during patient’s hospitalization.

Accountable Care Organizations

ACOs are comprised of physician groups, hospitals and other health care stakeholders to provide highly coordinated care delivery to Medicare patients. The goal is to provide proactive, effective care to chronically ill patient populations to circumvent the potential for adverse events and avoid duplication of services. The end result is improved outcomes and lower costs.

Medicare offers several ACO programs:

• Medicare Shared Savings Program — a program that helps a Medicare fee-for-service program providers become an ACO
• Advance Payment ACO Model — a supplementary incentive program for selected participants in the Shared Savings Program
• Pioneer ACO Model — a program designed for early adopters of coordinated care; however, this program no longer accepts application
• Next Generation ACO Model — offers increased risk and reward/shared savings tracks, capitation in year two and excludes meaningful use from required scoring; the program will begin in 2016 or 2017

Comprehensive Primary Care Initiative

Launched as a pilot program in 2012, the Comprehensive Primary Care Initiative (CPCI) is a four-year multi-payer initiative that offers population-based care management fees and shared savings opportunities to participating primary care practices. Practices must support the provision of five “comprehensive” primary care functions:

• Risk-stratified care management
• Access and continuity
• Planned care for chronic conditions and preventive care
• Patient and caregiver engagement
• Coordination of care across the medical neighborhood

The Future: Merit-based Incentive Payment System (MIPS) and Alternative Payment Models (APMs)

The Medicare Access and CHIP Reauthorization Act of 2015 created the MIPS and APM payment incentive channels as part of the phase out of Medicare fee-for-service.

MIPS is a new scoring program that combines PQRS, the Value-based Payment Modifier and the Medicare Electronic Health Record incentive programs within four overall scoring categories:

• Quality
• Resource use
• Clinical practice improvement
• Meaningful use of CEHRT

APMs are qualifying payment models that will grant increased bonus and incentive payments for providers working within ACOs, PCMHs and other bundled payment models. Qualifying providers receiving certain percentages of Medicare reimbursement from these models can opt out of the MIPS scoring program.

Additional Resources

• Read the ONC roadmap for yourself at www.healthit.gov/sites/default/files/nationwide-interoperability-roadmap-draft-version-1.0.pdf
• If you want to know more about meaningful use, see what CMS is saying at www.cms.gov/Regulations-and-Guidance/Legislation/EHRIncentivePrograms/index.html
• To learn more about ACOs from CMS, check out /www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/ACO/index.html
• Find out more about PCMHs from the NCQA at www.ncqa.org/Programs/Recognition/Practices/PatientCenteredMedicalHomePCMH.aspx
• You find out more about CPCi from CMS at https://innovation.cms.gov/initiatives/Comprehensive-Primary-Care-Initiative/index.html
CONCLUSION
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Interoperability is both a significant opportunity and daunting challenge within the evolving value-based climate. Forward-thinking providers understand that HIE is not only critical to MU attestation but also positioning for pay-for-performance incentives and population health.

Greenway Exchange is a patented and centralized clinical data exchange platform. It seamlessly exchanges clinical data between hospitals, healthcare systems, ambulatory providers, HIEs, immunization registries, labs, pharmacies and more. It sends and receives C-CDAs, demographics, scheduling information, immunization records and labs, as well as connections to devices. This cutting-edge infrastructure empowers caregivers to provide more efficient, responsive and transparent care, while also saving money.

53% of Greenway Health customers say clinical connectivity has improved clinical staff efficiency

50% say it’s improved the patient experience

46% say it’s improved front office efficiency

40% see stronger referral relationships