

2019 Health IT Report to Oregon's Health IT Oversight Council (HITOC)

Oregon Health Authority
Office of Health Information Technology



Oregon
Health
Authority

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This report is the work of the Oregon Health Authority's Office of Health IT, which staffs HITOC, conducts other health IT policy work, and operates the Oregon Health IT Program, bringing millions of federal dollars to Oregon for health IT programs and partnerships that support health system transformation. This report was developed by the following key Office of Health IT staff: Marta Makarushka, Lead Policy Analyst; Scott Jeffries, Research Analyst; Francie Nevill, HITOC Lead Analyst; Susan Otter, Director of Health IT, Oregon Health Authority (OHA).

INTRODUCTION AND PURPOSE

Oregon's Health IT Oversight Council (HITOC) was created by the Oregon legislature to ensure that health system transformation is supported by health information technology (health IT). HITOC is an advisory committee of the Oregon Health Policy Board and it is responsible for:

- Exploring health IT policy issues
- Crafting Oregon's health IT strategy
- Overseeing Oregon Health Authority's (OHA) health IT efforts
- Assessing the Oregon health IT landscape
- Reporting on Oregon's health IT progress
- Monitoring/reporting on federal health IT law and policy changes

This 2019 Health IT Report is submitted to HITOC in support of HITOC's 2020 Strategic Planning work.

What is health IT? Health IT is technology that stores, retrieves, shares, or uses health information, such as diagnoses, medications, allergies, records of doctors' visits, hospital admissions, lab results, and more. Health care providers, health plans, Medicaid coordinated care organizations (CCOs), health systems, hospitals, clinics, and other organizations use health IT to manage their businesses and take care of patients. Patients, families, and caregivers use health IT to see their health information, communicate with their providers, and manage health conditions.

OVERVIEW

This report consists of two health IT data briefs: Electronic Health Records (EHR) and Health Information Exchange (HIE), as well as considerations for HITOC. EHRs and HIE are foundational to all other health IT efforts. **This report touches only briefly on other important health IT issues**, including patient experiences of health IT, health IT opportunities to address social determinants of health, health IT implications and opportunities for health equity, and health IT for population management and value-based payment (VBP). Work to address these important issues is ongoing under HITOC, and where known resources exist, this report will cite them.

Each data brief presents the following:

- An executive summary with a high-level overview of the landscape
- Key concepts for Oregon
- Data summarizing what is known about Oregon's HIT environment, including challenges and information gaps

This report references supplemental documents:

- *Health Information Exchange Overview or HIE Overview:* <https://go.usa.gov/xpnuZ>
- *HIE in Oregon: A Tale of Two Worlds:* <https://go.usa.gov/xpnuK>
- *Office of Health IT Overview:* <https://go.usa.gov/xpnu8>
- *Behavioral Health HIT Scan and Report and the Behavioral Health HIT Workgroup Recommendations:* <https://go.usa.gov/xpRXt>

Currently, most of the available information on health IT is about organizations participating in federal and state programs. There are many **physical**, **behavioral** and **oral** health organizations that do not participate in such programs. Information on health IT use by participating programs is also limited and may not be a complete or current picture of health IT use among these organizations. OHA expects to have Medicare (MIPS) data and more complete physical, behavioral, and oral provider EHR and HIE information from CCOs later in 2020.

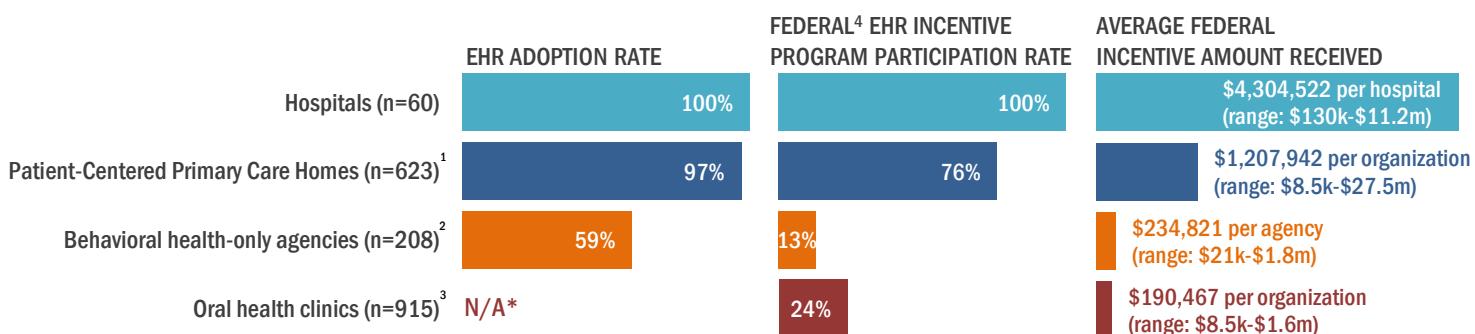
OREGON HIT DATA BRIEF: ELECTRONIC HEALTH RECORDS

EXECUTIVE SUMMARY

Oregon's health system transformation relies on health IT, and electronic health records (EHRs) are the foundational health IT tool. EHRs allow providers to electronically collect, store, and use clinical information. This helps providers participate in information sharing and care coordination, contribute clinical data for quality reporting and population health efforts, and engage in value-based payment (VBP) arrangements. EHRs also collect other data, including screening, assessment, and demographic information. Finally, EHRs can help providers share information with patients, their families, and their caregivers.

OREGON EHR ADOPTION IS VERY HIGH OVERALL, BUT DIGITAL DIVIDES EXIST.

Oregon has high rates of EHR adoption when compared to other states. However, when we compare EHR adoption rates of **PHYSICAL**, **BEHAVIORAL**, and **ORAL** health providers, a clear digital divide remains.

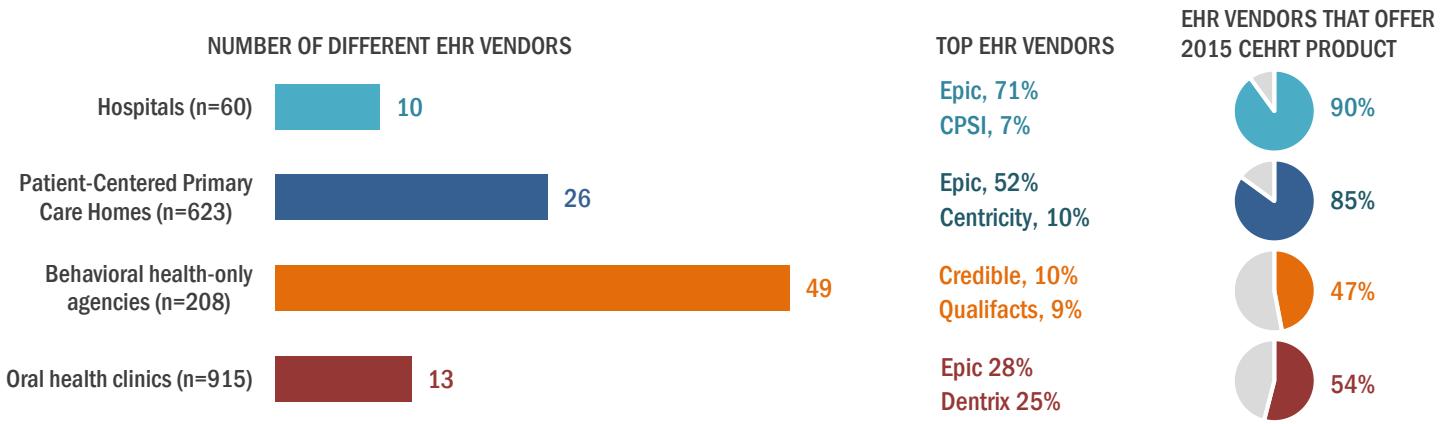


*Not enough data to meaningfully report EHR adoption rate

Physical health providers (represented by Patient-Centered Primary Care Homes, or PCPCHs) use a variety of EHR products, though the vast majority use only a handful of dominant vendors. Most vendors offer products which meet the most recent federal certification standards (2015 CEHRT⁵). PCPCHs have also benefited, along with hospitals, from high rates of participation in the federal Medicare and Medicaid EHR Incentive Programs.

Behavioral health providers use a wider array of products and no one vendor dominates; about half offer 2015 CEHRT. Most providers face challenges with configuring their EHRs for mandated reporting and struggle with managing specially protected information related to substance use treatment. Many are ineligible for the federal Medicare and Medicaid EHR Incentive Programs. For more information, including EHR adoption for all behavioral health providers (including those that are part of a larger physical health organization), see pages 9-10.

Oral health providers have the smallest pool of EHRs designed to meet their needs, and just over half offer 2015 CEHRT, though this is likely an underrepresentation as very limited oral health information is currently available. About one fourth of providers participated in the Medicaid EHR Incentive Program, most for only one year.



Source: Program participation data collected by Office of Health IT⁶

10/10/2019

PROGRAM CHANGES AND TRANSITIONS

The Medicaid & Medicare EHR Incentive Programs have led to an increase in adoption and meaningful use of certified EHR technology (CEHRT), bringing more than \$500 million to all Oregon hospitals and nearly 8,500 providers.⁷ But, these programs are changing...

2016	The Medicaid EHR Incentive Program (MEHRIP) peaked in 2016, which was the last year a provider could start the multi-year program (participation can continue through 2021).
2017	MEHRIP transitioned in the 2017 program year to the Merit-based Incentive Payment System (MIPS), created by the MACRA legislation. ⁸ MIPS incentivizes adoption and meaningful use of the latest certified EHR technology and has a broad reach across Oregon's physical health providers who serve Medicare patients, including primary care and specialists. Many Medicaid providers serve Medicare patients and are eligible for MIPS.
2019	All eligible hospitals in Oregon have completed MEHRIP participation. It is uncertain how many providers could continue MEHRIP participation. MEHRIP program year 2019 requires 2015 CEHRT.
2021	MEHRIP sunsets in 2021. Once it ends, many safety net clinics and pediatricians are unlikely to participate in MIPS.

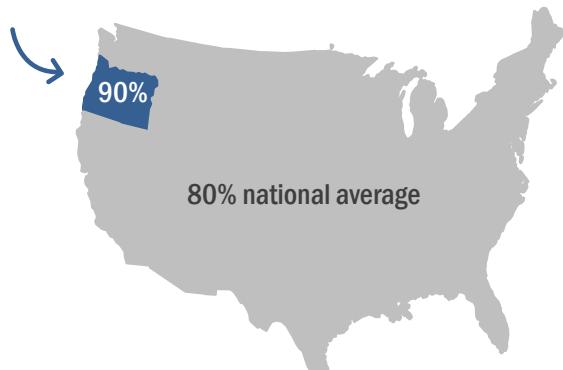
KEY EHR CONCEPTS FOR OREGON

- **Epic is widely used but not universal.** The majority of providers use a handful of EHR vendors, but there are over 145 different EHR products in use. Depending on Epic alone for electronic health information sharing would leave critical gaps.
- **EHRs vary significantly in their capacity to support OHA's policy goals.** This includes their capacity for health information exchange, patient engagement, quality reporting, compliance reporting for licensed behavioral health agencies, and data analytics⁹.
- **Federal EHR certification standards (CEHRT) promote more robust EHRs that better meet OHA's policy goals.** 2015 CEHRT requirements include improved health information exchange and patient engagement capabilities. Rates of 2015 CEHRT adoption are currently increasing in Oregon.
- **The high cost of EHRs**, including both the financial cost and the cost of staffing and maintenance, **contributes to lower EHR adoption rates among smaller organizations** with fewer resources.¹⁰
- While federal incentive programs are changing as described above, **several programs require or promote adoption of CEHRT**, including primary care programs (MIPS, Comprehensive Primary Care Plus, PCPCH) and the Certified Community Behavioral Health Clinic (CCBHC) program. These programs may drive continued CEHRT adoption and offer opportunities for aligning incentives and program requirements.
- **Some smaller providers have benefitted from purchasing collaboratives or other third party hosted EHRs**, including OCHIN Epic (for safety net clinics), local Independent Physician Associations, and Community Connect models where EHRs hosted by health systems are shared with unaffiliated clinics.
- **Provider satisfaction is increasing but challenges still remain with EHRs**, which can be burdensome and not aligned with provider workflows. Providers often report that EHRs contribute to provider burnout due to increased workload and reduced interpersonal interaction.¹¹

“Getting an EHR as comprehensive as we need is challenging...” – Behavioral Health Provider

OREGON SURPASSES THE NATIONAL AVERAGE IN PHYSICAL HEALTH EHR ADOPTION RATES.

Based on a 2017 national survey, **90% of Oregon office-based physicians have adopted certified EHRs**, which is significantly more than the 80% national average.¹²



Source: National Electronic Health Records Survey, National Center for Health Statistics

EHR adoption among CCO-contracted physical health providers has steadily increased since 2011, including the adoption of certified systems.¹³



Source: Office of Health IT, OHA

'Key' clinics: Key clinics are those that participate in specific federal and state programs that include funding to support health care transformation efforts, including HIT implementation and use. OHA relies on these clinics to deliver on health care transformation for the Oregonians they serve.

Almost all physical health key clinics in Oregon have adopted EHRs.

PERCENTAGE OF KEY CLINICS WITH AN EHR



Source: Program participation data collected by Office of Health IT
10/10/2019

*Reported per clinic (rather than organization)

Note: Key clinics can fall into more than 1 category. There are a total of 689 unique 'key' clinics represented.

Key clinics have high Medicaid EHR Incentive Program participation rates.

PERCENTAGE OF KEY CLINICS PARTICIPATING IN THE MEDICAID EHR INCENTIVE PROGRAM



Source: Program participation data collected by Office of Health IT
10/10/2019

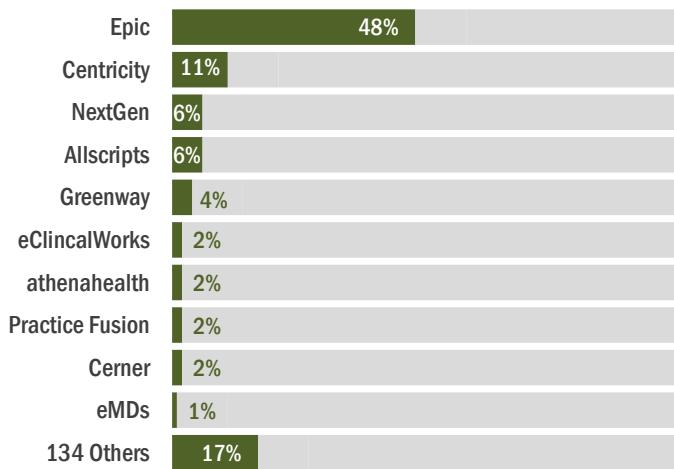
*Reported per clinic (rather than organization)

Note: Key clinics can fall into more than 1 category. There are a total of 689 unique 'key' clinics represented.

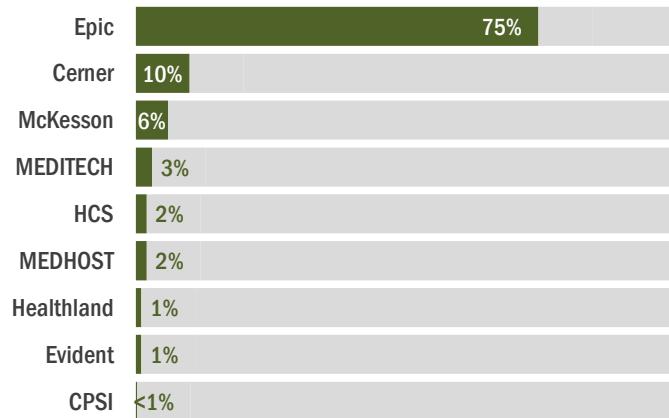
OREGON PROVIDERS USE OVER 145 DIFFERENT EHR VENDORS.

Epic is the most commonly used EHR in Oregon, but providers participating in the Medicaid/Medicare EHR Incentive Programs use over 145 different EHR vendors (144 by Eligible Professionals, 9 by Eligible Hospitals, with 6 overlapping for a total of 147). These providers are primarily physical health providers but include some oral health and behavioral health providers.

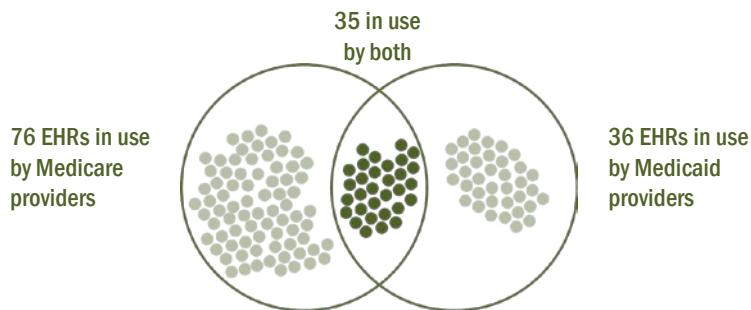
ELIGIBLE PROFESSIONALS (n=8,090)¹⁹



ELIGIBLE HOSPITALS ('weighted' by number of beds, n=6,660)²⁰



76 of the 147 EHR vendors are reported by Medicare participants only, whereas 36 are reported by Medicaid only and 35 are reported by both. This is likely due to the fact that Medicare providers are more likely to be specialty care providers, and specialty providers use a wider variety of EHRs.

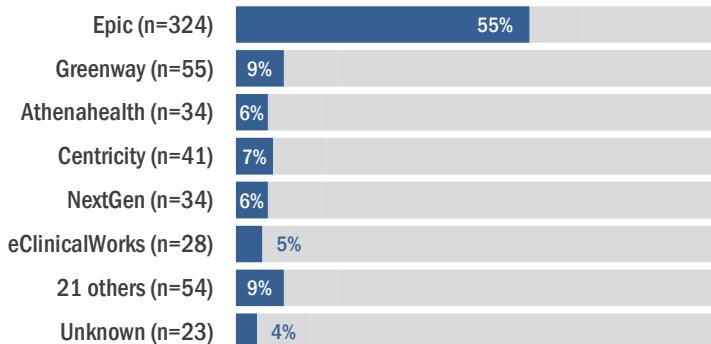


Source: Medicaid and Medicare EHR Incentive Programs
Includes all attestations since program year 2013²¹ through 10/9/2019

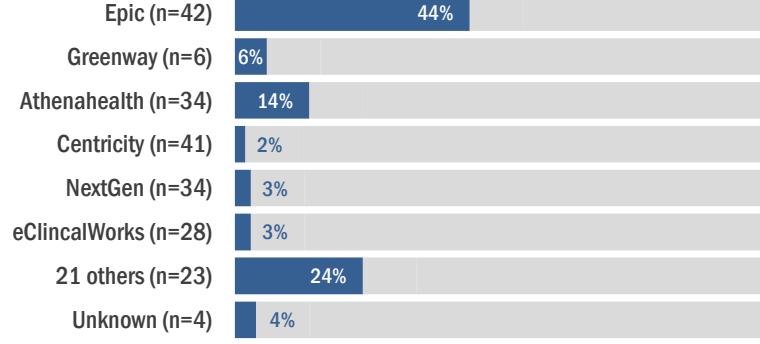
THERE ARE AT LEAST 27 EHR VENDORS IN USE AMONG PHYSICAL HEALTH KEY CLINICS.

The EHR landscape among key clinics, which are mostly primary care facilities, is also dominated by Epic. Rural Health Centers (RHCs) have the greatest percentage of non-dominant EHR adoption.

NON-RHC KEY CLINICS (n=593*)



RHC (n=96*)



Source: Program participation data collected by Office of Health IT
10/10/2019

Because Oregon providers use so many different EHRs, there is no single health information exchange (HIE) solution that will work for all providers. Oregon needs a variety of HIE options to meet providers' needs.

SOME LARGE HEALTH ORGANIZATIONS PROVIDE SUPPORT FOR SMALLER HEALTH ORGANIZATIONS.

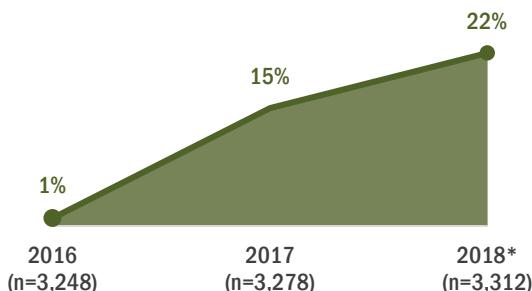
Some large health systems have provided EHR support for smaller hospitals or providers through Epic's Community Connect. Some Independent Practice Associations (IPAs) have supported EHR adoption for their members. OCHIN makes Epic available to Oregon's Federally Qualified Health Centers and Rural Health Centers, which are critical safety net clinics.

HEALTH ORGANIZATION	SERVING	VENDOR
OCHIN	FQHCs and RHCs across Oregon	Epic
Mid Valley IPA	Salem area	NextGen
AllCare IPA (FKA MRIPA)	Southern coast	Greenway
Douglas County IPA/Umpqua	Roseburg area	Umpqua OneChart (based on Centricity)
Epic Community Connect	Various health systems	Epic
Central Oregon IPA	Central Oregon and Gorge	Other supports

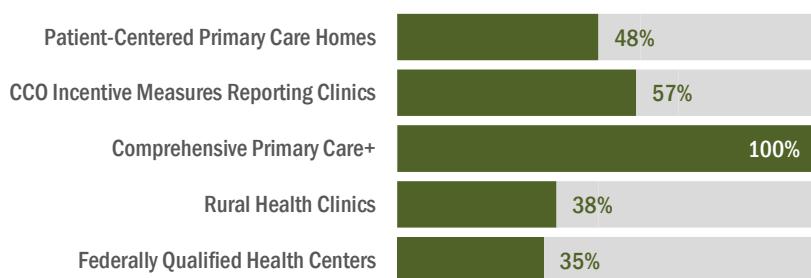
2015 CEHRT ADOPTION RATES ARE INCREASING, THOUGH MORE SLOWLY THAN ANTICIPATED.

Adoption of 2015 CEHRT, a more technologically advanced EHR, means providers are **better able to share information for care coordination and to engage with patients, and, when appropriate, their families and caregivers** (see 2015 CEHRT Highlights below). Changing requirements have driven increased adoption of 2015 CEHRT from year to year, with **22% of eligible professionals reporting 2015 CEHRT in their most recent MEHRIP participation year**.²² Adoption of 2015 CEHRT is higher among key clinics, particularly CPC+ which requires 2015 CEHRT for participation in 2019.

2015 CEHRT ADOPTION:
ELIGIBLE PROFESSIONALS SINCE 2013



2015 CEHRT ADOPTION:
KEY CLINICS



Source: Medicaid EHR Incentive Programs

Includes all attestations since program year 2013 through 11/20/2019

2015 CEHRT Highlights

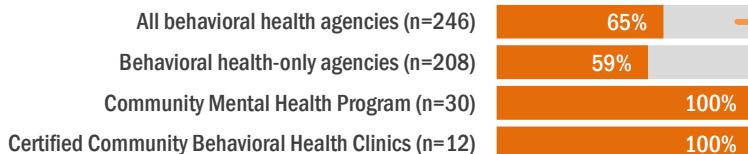
- Supports **patient electronic access** to health information through new functionalities and a range of potential technologies that allow patients greater flexibility and choice in how they access and share their health information.
- Able to **record sexual orientation and gender identity, as well as social, psychological, and behavioral data** (e.g., education level, stress, depression, and alcohol use).
- Includes **data segmentation privacy requirements** to support the exchange of sensitive health information.
- Improves patient safety** by applying enhanced user-centered design principles to health IT.

EHR ADOPTION AMONG BEHAVIORAL HEALTH PROVIDERS IS MODERATELY HIGH WITH SOME CHALLENGES.

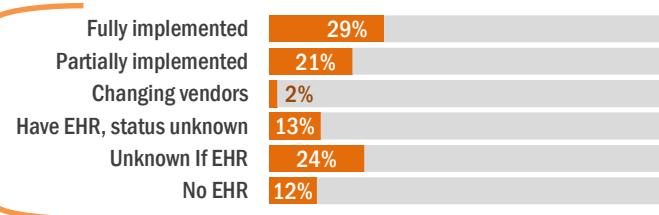
EHR adoption among Oregon's behavioral health agencies (those that offer at least one OHA-certified program) is moderately high. However, only a third have fully implemented their EHRs, and many agencies have found their EHR does not adequately support their needs. Behavioral health agencies have had limited access to financial incentives, which has likely contributed to these challenges. They have expressed the need for financial support, shared learning opportunities, and education to help them select and implement EHRs.

65% OF BEHAVIORAL HEALTH AGENCIES HAVE ADOPTED AN EHR.

All Community Mental Health Programs (CMHPs) and Certified Community Behavioral Health Clinics (CCBHCs) are using an EHR. OHA relies on these clinics to deliver on health care transformation for the Oregonians they serve.



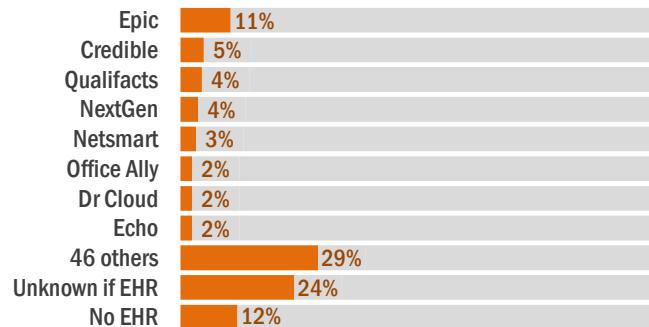
Of all behavioral health agencies (n=246), **almost one-third of agencies have fully adopted their EHR**, meaning that all patient data is tracked electronically and not on paper.



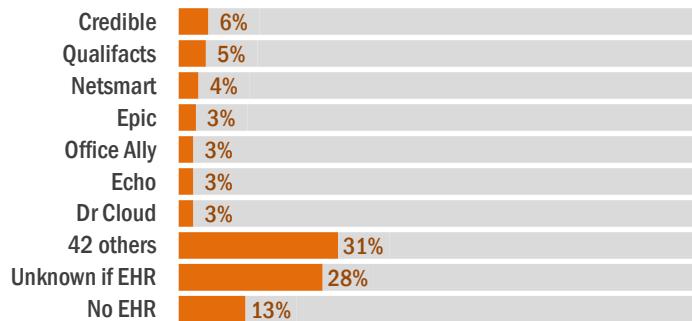
BEHAVIORAL HEALTH PROVIDERS USE ABOUT 50 DIFFERENT EHR VENDORS.

Like Oregon providers overall, **behavioral health providers use a wide variety of EHRs and therefore face information sharing challenges**. For behavioral health agencies not part of a large physical health organization, the top EHR vendors are Credible, Qualifacts, Netsmart, and Epic.

EHR VENDORS AMONG ALL BEHAVIORAL HEALTH AGENCIES (n=246)

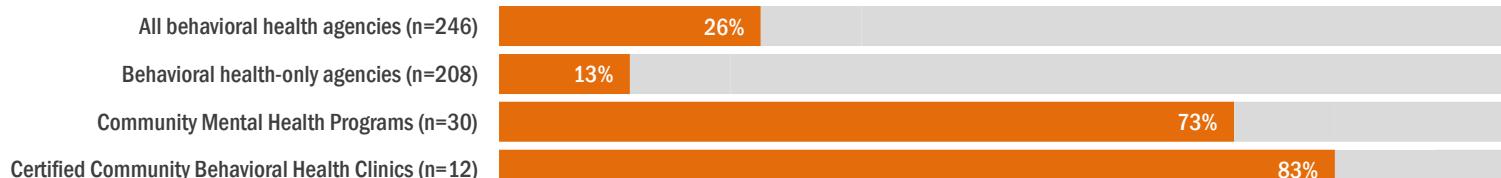


EHR VENDORS AMONG BEHAVIORAL HEALTH AGENCIES THAT ARE NOT PART OF A LARGE PHYSICAL HEALTH ORGANIZATION (n=208)



Behavioral health Medicaid EHR Incentive Program participation has been limited because most behavioral health providers are not "eligible providers" according to program rules. Only 13% of behavioral health agencies not part of a large physical health organization have participated. Their average incentive payments have been a fraction of the average for physical health provider payments. Participation rates are higher for CMHPs and CCBHCs.

BEHAVIORAL HEALTH MEDICAID EHR INCENTIVE PROGRAM PARTICIPATION



Source: Office of Health IT behavioral health survey and other EHR data collected by Office of Health IT²³
10/10/2019

CHALLENGES IN EHR ADOPTION FOR BEHAVIORAL HEALTH AGENCIES

OHA's Behavioral Health HIT Workgroup convened in fall 2018 to review the findings put forth in OHA's 2017 Behavioral Health HIT Scan Report and develop recommendations to address the health IT needs of Oregon's behavioral health system. Top challenges identified include:

- Need for clarification and support around 42 CFR Part 2 and its implications.
- Behavioral health providers manage funding sources that have significant reporting burdens which EHRs often do not support.
- Oregon's behavioral health system needs better, more accurate data to
 - meet reporting expectations,
 - advocate for their needs,
 - secure funding, and
 - engage in VBP.

LOOKING AHEAD FOR BEHAVIORAL HEALTH AGENCIES

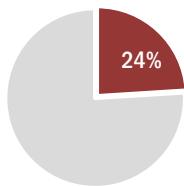
Behavioral health organizations need EHRs that meet their unique information capture and management needs. These EHRs must be interoperable and support behavioral health reporting requirements, such as electronic metrics reporting.

Support needs identified in the Workgroup report include:

- Help navigating the EHR vendor landscape
- EHR market analysis
- Shared learning opportunities
- Financial incentives
- HIT education
- Support from larger, better resourced organizations

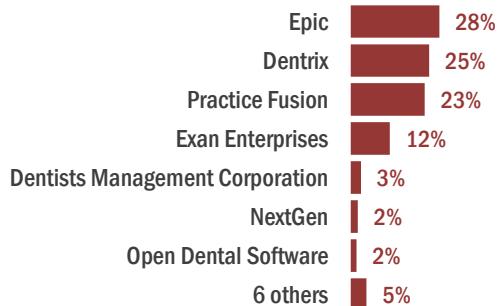
MORE INFORMATION IS NEEDED ON ORAL HEALTH PROVIDER EHR ADOPTION.

OHA currently has limited information on oral health EHR adoption. The oral health clinics included in this section are from Insure Kids Now (n=915), a statewide listing of Medicaid/CHIP providers. The source of EHR information is the Medicaid EHR Incentive Program (MEHRIP), but many oral health providers have not participated in MEHRIP and may still have an EHR.

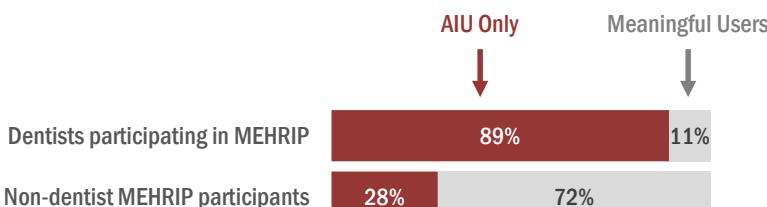


About a quarter (n=219) of oral health clinics have reported an EHR through participation in MEHRIP.

EHR VENDORS AMONG ORAL HEALTH CLINICS PARTICIPATING IN THE MEDICAID EHR INCENTIVE PROGRAM (n=219)



MEHRIP participation data indicates that **most** (89%) **dentists only attested for adopt/implement/upgrade (AIU)**, not returning and demonstrating meaningful use of their EHRs, compared to 28% of other provider types.



Source: Medicaid EHR Incentive Program
9/20/2019

More information is needed about oral health EHR adoption rates and EHR functionality, including to what extent oral health EHRs support sharing health information among oral health providers and other types of providers (like physical, behavioral, and other providers). Beginning in 2020, CCOs will provide more EHR information about their contracted oral health providers.

OREGON HIT DATA BRIEF: HEALTH INFORMATION EXCHANGE

HEALTH INFORMATION EXCHANGE POLICY CONTEXT AND EXECUTIVE SUMMARY

Electronic health information sharing, or health information exchange (HIE)⁸, is an important tool for supporting Oregon's health care transformation objectives of high quality, coordinated care and paying for value instead of volume. See *HIE Overview*.



HIE supports better coordinated care by helping providers across different disciplines share clinical data. To coordinate care, a patient's physical, behavioral, and oral health providers must be able to share information. HIE can provide real-time access to patient information at the point of care, promoting safer and better-informed clinical decisions, especially when it is easily accessible within the clinician's workflow. HIE also supports referrals, notifications about critical health events, and access to prescription or other important clinical patient information.

HIE supports population health management and value-based payment (VBP). Oregon's health care transformation model is moving toward making most payments through value-based arrangements – 70% of CCO payments by 2024. In addition to supporting care for individual patients, HIE helps:

- providers, CCOs, and health plans share clinical data for large sets of patients, which can support analytics, population management, and value-based payment arrangements.
- organizations gather clinical data to identify patients at risk for poor health outcomes and assess the effectiveness of interventions. This data could also identify and track health disparities.
- CCOs, health plans, and primary care clinics manage value-based payment arrangements by ensuring clinical information is available. Additional health IT tools and analytics activities are needed to manage value-based payment arrangements.

Including CCOs/health plans in HIE increases its potential complexity. It also provides an opportunity for CCOs/health plans to coordinate and financially support shared HIE solutions.

In the next five years, HIE has the potential to better support complex care coordination, including addressing social determinants of health.

To manage new VBP contracts, providers and health plans/CCOs need to share information about care goals, plans of care, and information about risks and social factors that impact health outcomes. Connecting health care and social services sectors through health IT has the potential to support better health outcomes and could help policymakers better understand social determinants of health gaps so public investments can be allocated to ensure that social services needs are being met.

IN THE PAST 5 YEARS, OREGON HAS SEEN UNPRECEDENTED GROWTH IN HIE.

2014

Emergency Department Information Exchange (EDie) implementation just beginning²⁴

Primary method for moving care summaries is Direct secure messaging or EHR-based tools

Five regional HIEs (one in development) cover about 40% of Oregon counties; limited services available²⁵

Virtually no electronic data sharing among different provider types, with fax being the primary method

Virtually no connections between disparate networks

Although Oregon's Prescription Drug Monitoring Program (PDMP) was launched in 2011, there was no EHR integration

Health IT for population management is in its infancy; value-based payment is not a major part of Oregon's landscape

2019

Many Oregon organizations have real-time access to hospital and emergency department event notifications for their patients from hospitals in Oregon and bordering states (p. 15-17)

Major hospitals, health systems, and their affiliated provider groups have on-demand access to care summaries for care their patients receive outside their system (p. 17-19)

Regional HIEs are available in half of Oregon's counties and serve an important role in their communities (p. 20)

Behavioral health and oral health providers are using HIE; they also share important patient information with physical health providers (pgs. 21-22)

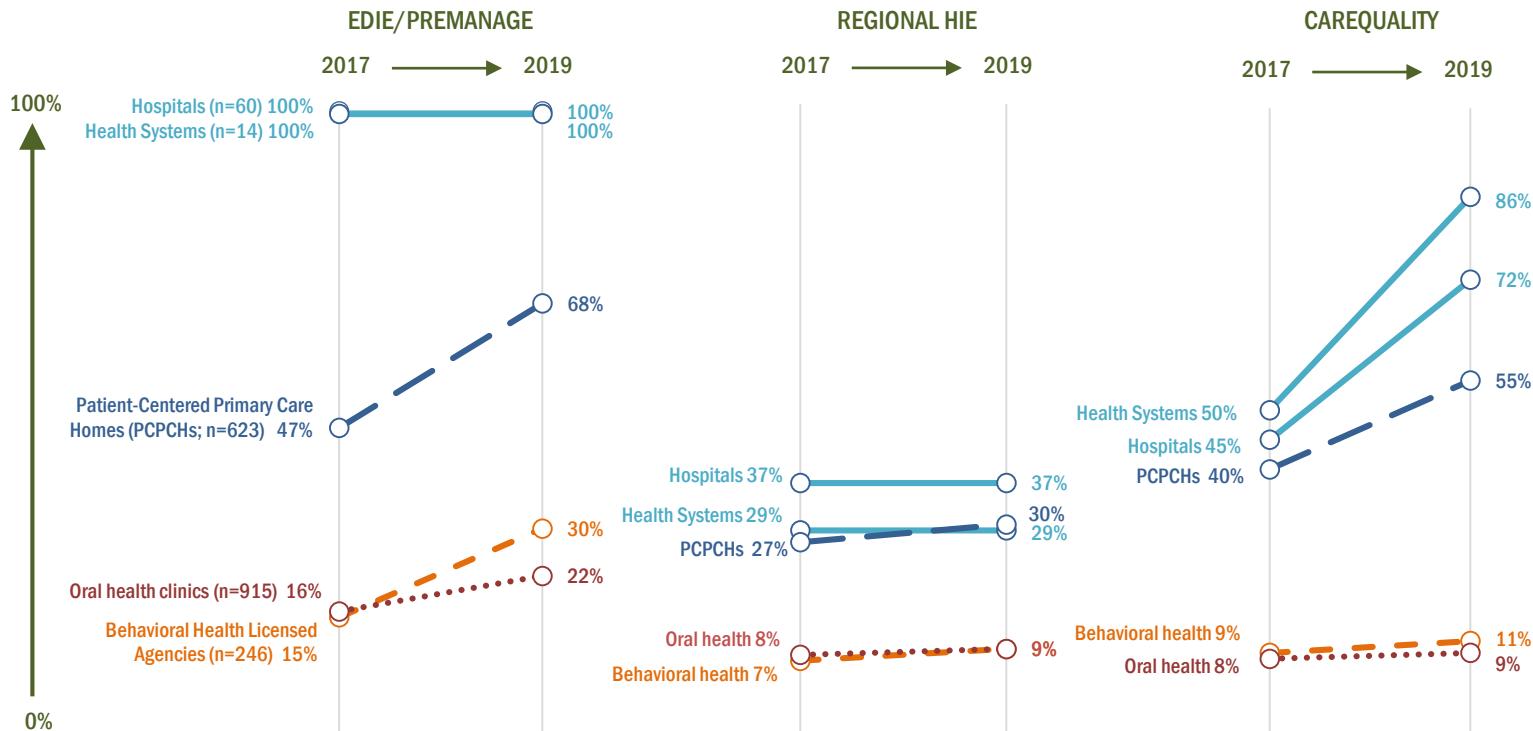
Providers use multiple HIE networks; some have connected to each other(p. 23-24)

Providers can access opioid prescription data more easily; providers with health IT integration access it at much higher rates (p. 25-27)

Providers use clinical data entered, stored, and shared by health IT to better manage populations and target interventions. This also supports the dramatic increase in value-based payment arrangements. (p. 27)

ADOPTION OF VARIOUS HIE TOOLS IS INCREASING IN OREGON.

Overall, HIE in Oregon has increased significantly, with major gains in hospital event notifications through EDie/PreManage²⁶ and nationwide query-based networks such as Carequality (see pages 20-21 for others). Hospitals and health systems have the highest adoption rates, and physical health providers' rates have also increased. Behavioral and oral health providers are participating but at lower rates.



Source: Program participation data collected by Office of Health IT
10/10/2019

GROWTH AND EVOLUTION OF HIE IN OREGON

Oregon has seen a dramatic increase in HIE since 2009. The HIE environment has evolved, including national efforts influencing Oregon's HIE landscape, vendor-based efforts, expanded services and geographic areas for existing regional HIEs, and new regional HIEs. (See *HIE Overview*.)

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- The timeline chart illustrates the evolution of Health Information Exchange (HIE) in Oregon from 2009 to 2019. Major milestones include:
- 2009:** HITOC's first HIE environmental scan²⁷ noted nine regional HIE efforts in Oregon, as well as several hosted EHRs (which also allow providers to share clinical data) and the development of Epic Care Everywhere. Although eHealth Exchange (then known as "Nationwide Health Information Network"), a nationwide query-based network, launched in 2004, in 2009 its focus was federal agencies, so it did not impact Oregon's providers.
 - 2011:** Public Health Immunization Registry begins bi-directional exchange with pediatrician offices.
 - 2011:** ONC prioritizes state HIE funding for Direct secure messaging, which later became a requirement under Meaningful Use/EHR Incentive Programs. Oregon launches CareAccord, which provides Direct secure messaging through a web portal for organizations whose EHRs do not offer it, or who lack an EHR (ended March 2018).
 - 2013:** CommonWell (a nationwide query-based network) launches.
 - 2013:** Oregon's regional HIEs include Jefferson HIE, Gorge Health Connect, and Central Oregon HIE. IHN-CCO launches their Regional Health Information Collaborative (RHIC). Many regional HIE efforts envisioned in 2009 did not develop by 2013.
 - 2015:** Carequality (a nationwide query-based network) launches. All Oregon hospitals commit to implementing EDie, and implementation begins.
 - 2015:** Oregon launches the EDie Utility, a public/private partnership and joint funding/governance model. All hospitals are live on EDie within 15 months. CCOs become first adopters of PreManage.
 - 2017:** Oregon's Office of Public Health makes integrated Prescription Drug Monitoring Program (PDMP) access available.
 - 2018:** OHA and the Oregon Health Leadership Council establish the HIT Commons as a public/private partnership, using a joint funding model. EDie Utility becomes a project of the HIT Commons and extends its investment in EDie for three years. HIT Commons launches the PDMP Integration initiative to fund statewide integrated access for prescribers and pharmacists.
 - 2019:** Oregon's HIE Onboarding Program supports onboarding critical Medicaid physical, behavioral and oral health providers to Reliance eHealth Collaborative in several regions. More than half of CCOs are participating.
 - 2019:** HIT Commons begins exploration of an Oregon Community Information Exchange, which would connect health care and social services providers.

PROFILE OF SUCCESS: HIT COMMONS

The broad success of two HIT Commons initiatives: EDie/PreManage and the Prescription Drug Monitoring Program Integration initiative can offer insight for HITOC. Common factors include:

- Narrow, defined scope
- Clear return on investment and value
- Relatively low cost, with OHA sponsorship to support CCO/Medicaid participation
- Early adopters shared their successes
- Shared governance
- Careful nurturing and collaboration, including regional collaboratives

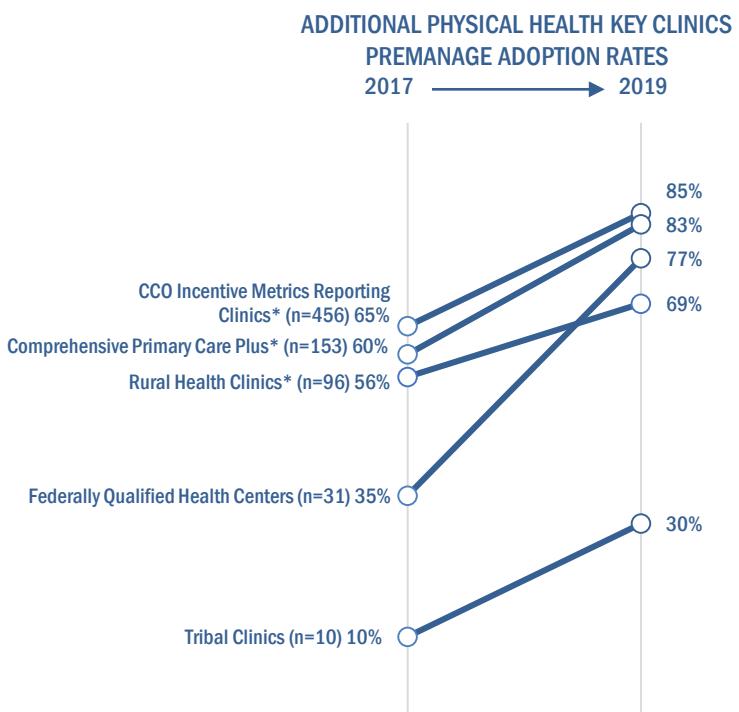
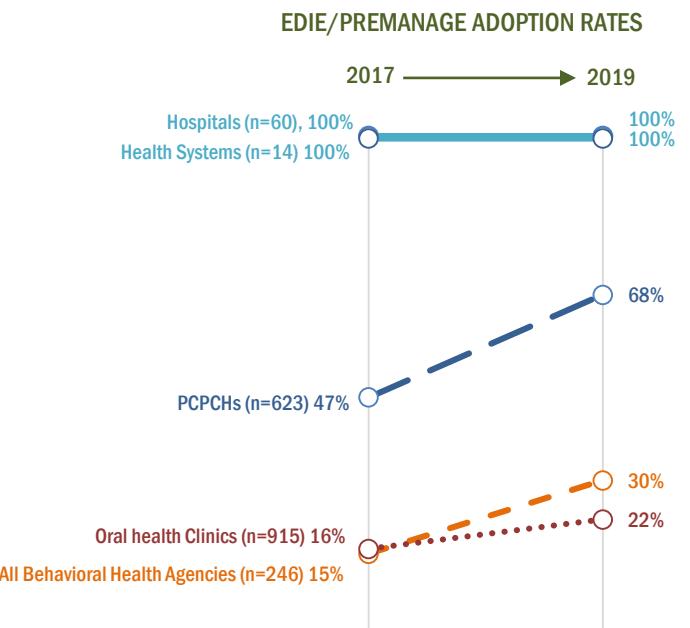
KEY HIE CONCEPTS FOR OREGON

- **EHR foundations cannot be separated from HIE strategies.** Access to robust, certified EHRs is a major driver of HIE opportunities.
- **Although physical, behavioral, and oral health providers are participating in health information exchange at increasing rates, digital divides persist.** These digital divides are complex but run largely along lines of access to resources, creating two “worlds.” This disparity impacts some more significantly than others, but ultimately affects the whole health care system. See *HIE in Oregon: A Tale of Two Worlds*.
- **Oregon providers typically need multiple HIE tools to meet all their HIE needs.** Providers use HIE tools for sharing clinical information for patient care, value-based payment, population management, analytics, and more. These needs are too complex to be met by any single tool available today; providers are likely to continue to need multiple tools over the next five years. See *HIE Overview*.
- **Large organizations often depend on nationwide query-based networks and vendor-driven query-based networks which provide clinical document exchange with mostly other large organizations.** Those organizations require other tools to meet other HIE needs. Most smaller organizations, including many serving diverse populations, cannot access nationwide query-based networks and vendor-driven query-based networks. See *HIE Overview*.
- Federal regulations that provide special protection relating to substance use disorder treatment information (42 CFR Part 2) are challenging to interpret and result in reduced information sharing, even when such sharing is allowable under the regulation. **42 CFR Part 2 remains a barrier to behavioral health participation in HIE, due to perceptions as well as the regulation itself.**
- **The focus on social determinants of health brings exciting new opportunities and serious challenges in health IT.** Better coordination between health care and social services has the potential to provide better care and better health at a lower cost. However, new challenges around technology, trust, legal requirements including consent, and more are emerging.²⁸
- **Oregon stakeholders and partners will likely face major transitions over the next five years due to federal changes.** Changing regulations and the planned national Trusted Exchange Framework and Common Agreement are creating uncertainty in the marketplace. The need for regulatory clarity is in tension with the need to make decisions now for patient care and health system transformation.²⁹
- **There is a growing need to share data in new ways.** CCOs/health plans, providers, and patients need to share clinical data, and that will become more urgent with likely federal regulations. HIE can help accomplish these tasks, but providers and CCOs/health plans will need to build HIE capacity.

Many Oregon organizations have real-time access to hospital and emergency department event notifications for their patients from hospitals in Oregon and bordering states.

Oregon has invested in the Emergency Department Information Exchange (EDie) and its companion product, PreManage, for emergency department (ED) and hospital event notifications. PHYSICAL health providers have significantly higher EDie/PreManage adoption rates than BEHAVIORAL health providers. ORAL health providers have low PreManage adoption rates, but may receive ED notifications from other sources like a Dental Care Organization (DCO).

- All hospitals and health systems, and a majority of **physical** health key clinics have adopted EDie/PreManage (aka Collective Platform).
- Though rates of PreManage adoption have increased among **behavioral** health agencies since 2017, adoption rates remain low except for agencies with Community Mental Health Programs and Certified Community Behavioral Health Clinics (see p. 21).
- Though few **oral** health providers/clinics are currently connected to PreManage, all Medicaid DCOs are using PreManage to coordinate follow up care for members recently admitted to the ED. DCOs report preferring this workflow rather than having individual clinics directly access PreManage.³⁰
- All CCOs and most major health plans in Oregon use PreManage to coordinate member care. Additionally, nearly all make PreManage available to their contracted (primary, behavioral, and oral) providers.



Source: Program participation data collected by Office of Health IT
10/10/2019

HITOC Strategies in Support of Hospital Event Notifications

- **EDie/PreManage (aka Collective Platform)** sends real-time hospital notifications. It allows providers to enter care guidelines for their patients.
- **OHA's Medicaid PreManage Subscription** is available at no cost to Medicaid-serving entities.
- **HIT Commons** is a public/private partnership established to accelerate and advance health information technology adoption and use across Oregon.

See *Office of Health IT Overview*.

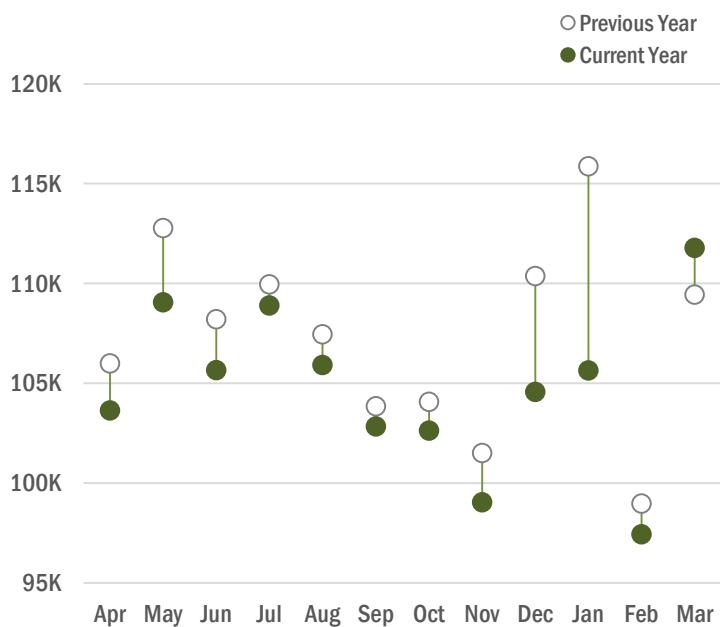
Additional types of Oregon entities are using PreManage to improve care including the following entity types:

- **31 social service agencies**, including all DHS Type B Area Agencies on Aging, Aging & People with Disabilities field offices, and Intellectual & Developmental Disabilities offices³¹
- **76 skilled nursing facilities**
- **33 payers/risk bearing groups**, including all CCOs, most health plans, and all Dental Care Organizations (DCOs)
- **2 regional health information exchange organizations**

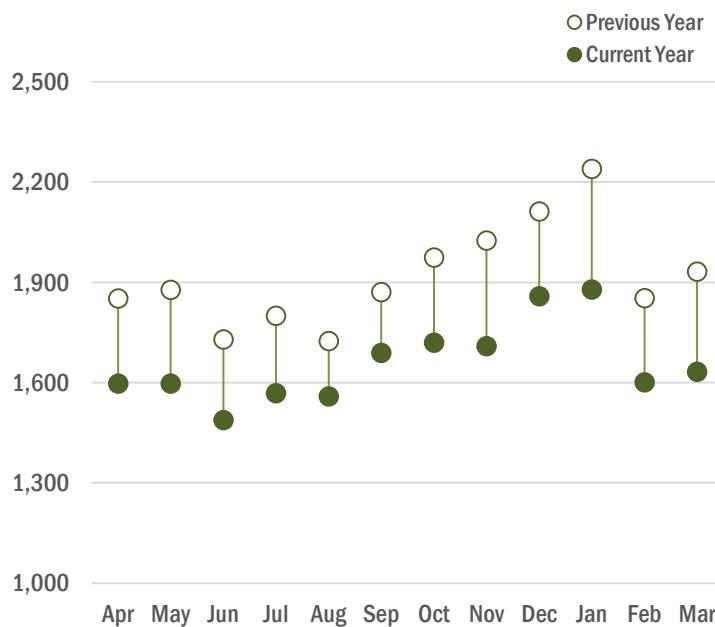
Source: Collective Medical Technologies
9/3/2019

Emergency department visits have decreased over the last year due to a variety of factors. EDie/PreManage use was an important contributor to these efforts.³²

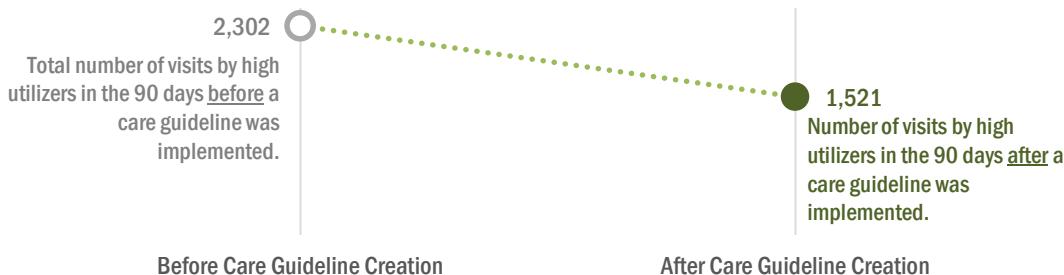
The number of **total ED visits decreased by 2.5%** from 2018 to 2019 (31,353 fewer visits).



Potentially avoidable visits from high utilizers decreased by 13.5% from 2018 to 2019 (3,092 fewer visits).



ED visits by high utilizers decreased by 34% in the 90 days following the initial creation of a care guideline.³³



Note: A 'high utilizer' is defined as a patient who seeks medical attention at an emergency department five or more times in 12 months.

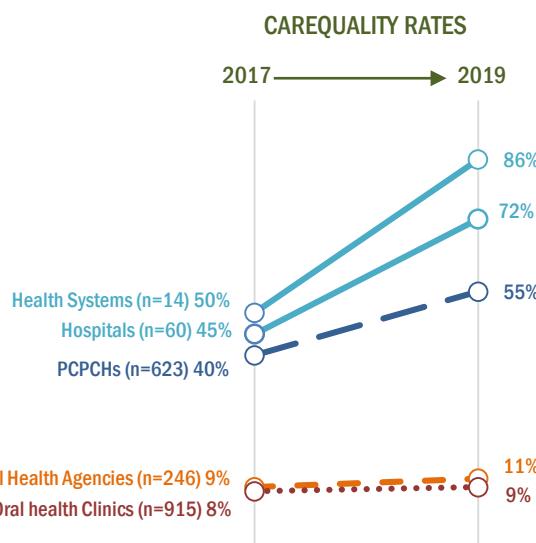
Source: Apprise Health Insights, Quarterly EDie Analytics Dashboards
9/6/2019

2 Major hospitals, health systems, and their affiliated provider groups have on-demand access to care summaries for care their patients received outside their system.

Many providers access care summaries via a query-based network (either nationwide or vendor-based). **Carequality**, **CommonWell**, and **eHealth Exchange** (nationwide networks), and **Epic's Care Everywhere** (vendor-based network) help providers exchange care summaries, which are clinical documents that summarize care a patient received from other providers. This can help clinicians make better care decisions. Many EHRs can deliver this information within the provider's workflow. Most query-based network participation is driven by a provider's EHR vendor; eHealth Exchange is the exception. (See *HIE Overview* for details about query-based networks and an overview of their advantages and limitations.)

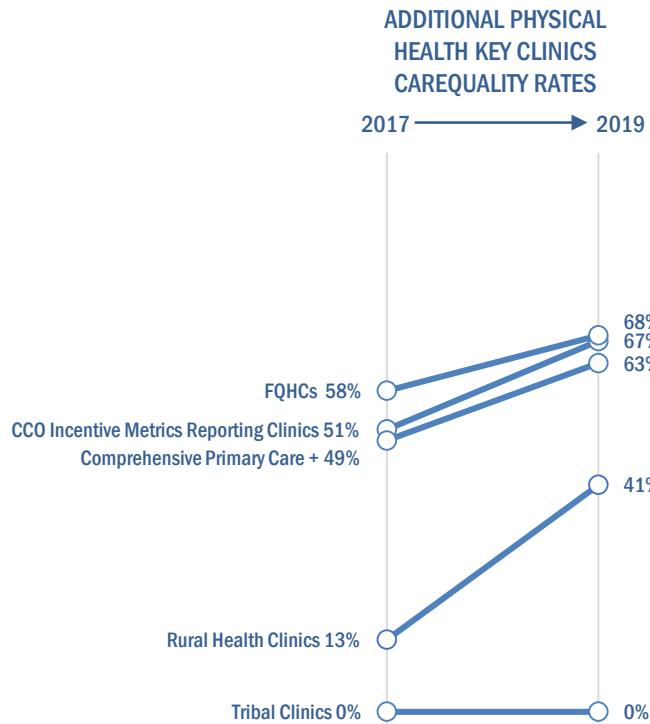
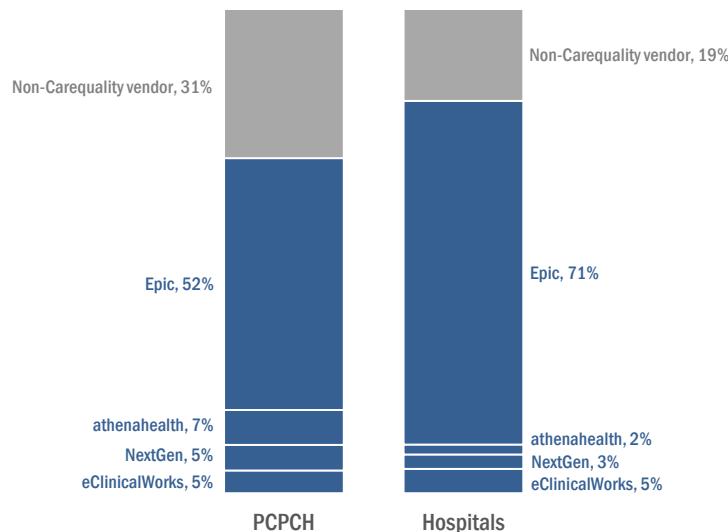
Carequality, a nationwide query-based network, has a strong presence in Oregon. Currently, most EHR vendors that have implemented Carequality are physical health vendors. **Physical health** entities, therefore, have significantly higher Carequality access rates than **behavioral health**; **oral health** providers are not connected except those that are part of a larger physical health organization.

- A majority of hospitals, health systems, and **physical** health key clinics can access Carequality. Access rates are lower among other physical health entities.
- Carequality access has increased slightly among **behavioral** health agencies since 2017, but only for agencies that are part of a larger physical health organization and two Certified Community Behavioral Health Clinics using a participating vendor.
- Oral** health provider access to Carequality is exclusively among those that are part of a larger physical organization. No standalone oral health clinics are connected to Carequality.



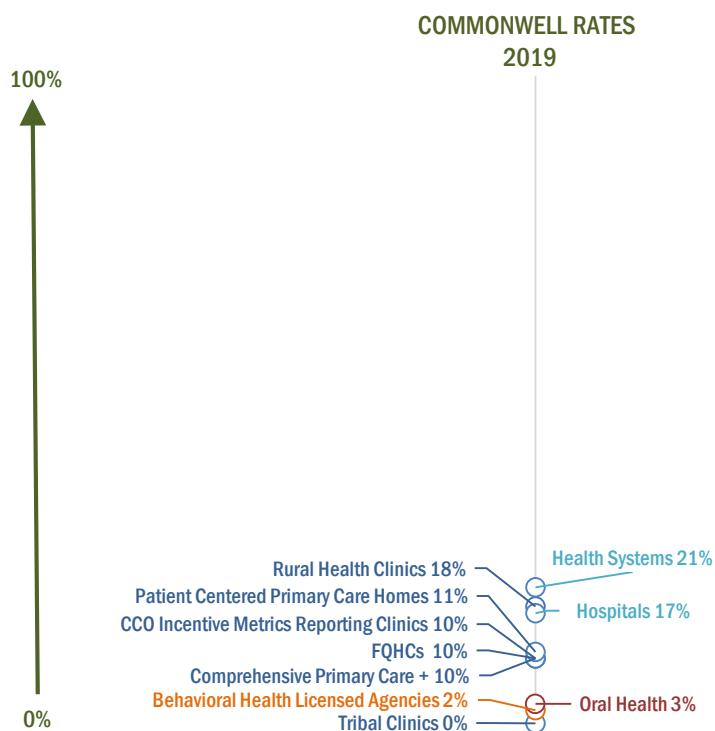
Potential Oregon Carequality Connectivity

The chart represents potential Carequality access if all PCPCHs and hospitals that are using a vendor that has implemented Carequality were to have access. Potential Carequality access rate is 69% among PCPCHs and 81% among hospitals. Again, the graph depicts the potential, not actual, Carequality users in Oregon.



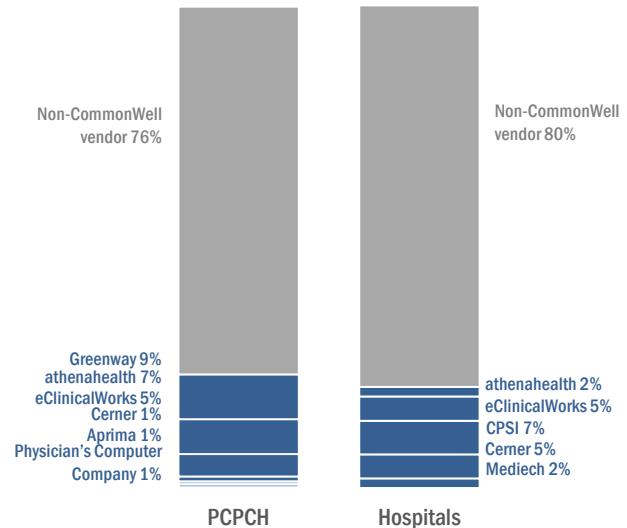
Source: Program participation data collected by Office of Health IT
10/10/2019

CommonWell, like Carequality, is a nationwide query-based network that exchanges clinical documents and access is dependent on a provider's EHR vendor (See *HIE Overview*).



Potential Oregon CommonWell Connectivity

The chart represents potential CommonWell access if all PCPCHs and hospitals that are using an EHR vendor that has implemented CommonWell were to in fact get access. Potential CommonWell connectivity rate is 24% among PCPCHs and 20% among hospitals. Again, the graph depicts the potential, not actual, Carequality users in Oregon.



Source: Program participation data collected by Office of Health IT
10/10/2019

eHealth Exchange, another nationwide query-based network, is also used in Oregon. (See *HIE Overview*). See page 26 for health systems who are eHealth Exchange participants. OCHIN, Reliance eHealth Collaborative, and IHN-CCO's Regional Health Information Collaborative are also participants. eHealth Exchange is considering connecting to Carequality.

Epic's Care Everywhere, a vendor-driven query-based network, has a strong presence in Oregon because of Epic's dominance. (See page 26 for health systems using Epic.) Not all Epic users have implemented Care Everywhere, and OHA does not currently have data on which Epic users have done so. (See *HIE Overview*.)

Direct secure messaging is another method that providers can use to exchange care summaries. It is similar to secure e-mail. Direct Secure Messaging is HIPAA-compliant and specifically designed to exchange patient health information across different EHR networks.

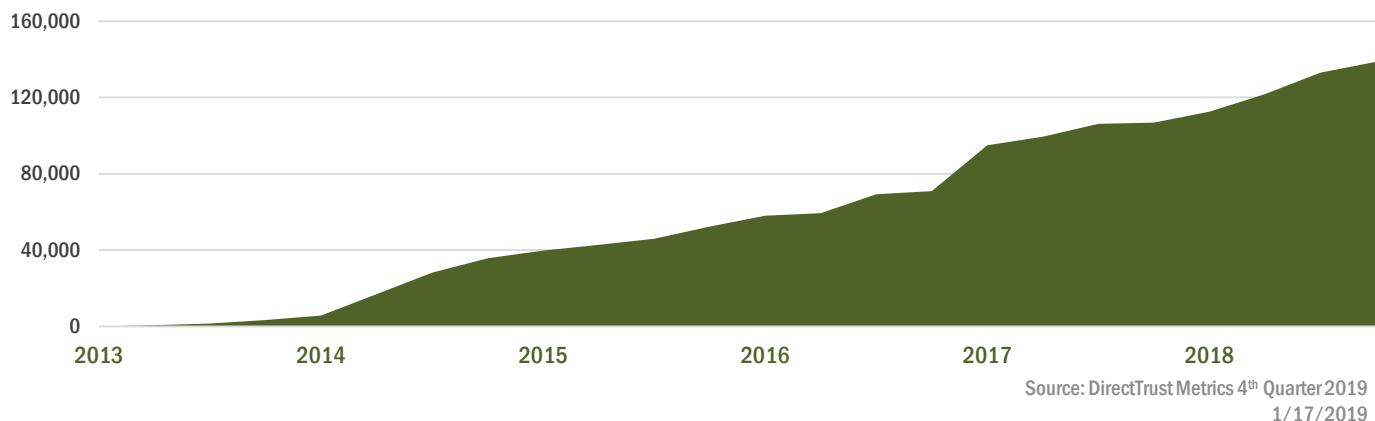
Direct secure messaging availability continues to increase nationally, reinforced by federal EHR incentive programs requirements. Use has focused on transition of care summaries to meet federal EHR incentive program requirements. There are ongoing efforts to introduce Direct secure messaging for other use cases. See *HIE Overview*.

HITOC HIE Strategy

 **OHA's Flat File Directory** assists organizations with identifying Direct secure messaging addresses across the state to support use of Direct, including to meet federal Meaningful Use requirements for sharing Transitions of Care summaries. (see *Office of Health IT Overview*)

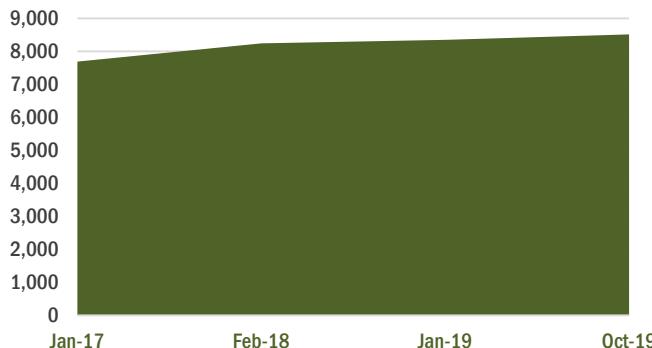
Health care organizations served by national DirectTrust HISPs and the Oregon Flat File Directory have steadily increased.

HEALTH CARE ORGANIZATIONS SERVED BY NATIONAL DIRECTTRUST HISPS

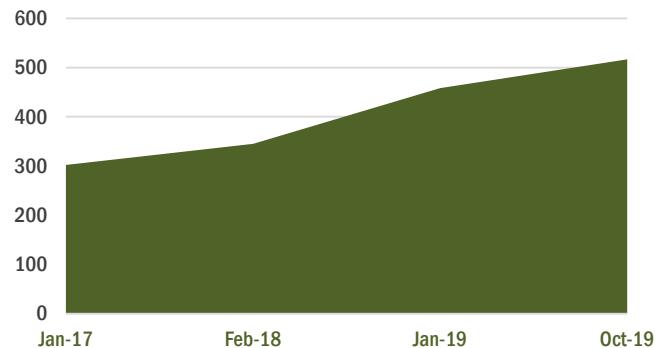


Source: DirectTrust Metrics 4th Quarter 2019
1/17/2019

PROVIDERS IN OREGON FLAT FILE DIRECTORY



FACILITIES IN OREGON FLAT FILE DIRECTORY



Note: Flat File Directory participating facilities are part of 55 unique organizations

Source: Oregon Flat File Directory, OHA

10/18/2019

Regional HIEs are available in half the counties in Oregon and serve an important role in their communities.

In Oregon, there are currently two main regional HIEs: Reliance eHealth Collaborative, and IHN-CCO's Regional Health Information Collaborative. They both include a community health record, which brings together information from many participating providers into a unified record for each patient, as well as other HIE functions. Participants include physical, behavioral and oral providers. Both are branching into the social determinants of health sphere.

Unlike nationwide and vendor-driven query-based networks, regional HIE is EHR vendor agnostic, making it potentially accessible to a wider array of providers. Regional HIEs are often sponsored by health plans/CCOs and hospitals, because regional HIEs allow them to access clinical information for the patients they serve, improving opportunities for value-based payment and other functions.

Reliance eHealth Collaborative

- 2011 Jefferson HIE is formed as a collaboration between Providence, Asante, and four CCOs in Southern Oregon
- 2015 Jefferson HIE merges with Gorge Health Connect
- 2016 Jefferson HIE becomes the vendor for Central Oregon HIE
- 2017 Jefferson HIE renamed Reliance eHealth Collaborative, connects to eHealth Exchange, EDIE data flow to Reliance

Core services: community health record, regional eReferrals, results delivery, hospital event notifications, data analytics/reporting, HISP
Regions active: Central, Gorge, Southern, Southern Coast, Douglas Co.

Major participants:

8 CCOs: PacificSource Gorge, PacificSource Central Oregon, AllCare, Jackson Care Connect, Cascade Health Alliance, Primary Health of Josephine County (thru 2019), Advanced Health, Umpqua Health Alliance, Regence

Hospitals/health systems: Providence Health System, Asante Health System, St. Charles Health System, Sky Lakes, Mid-Columbia Medical Center

IHN-CCO Regional Health Information Collaborative (RHIC)

- 2015 RHIC goes live for IHN-CCO
- 2015 RHIC/IHN-CCO adds social service providers
- 2018 RHIC connects to EDIE, eHealth Exchange, PDMP

Core services: community health record, SDOH eReferrals via Unite Us partnership

Regions active: Linn/Benton/Lincoln counties

Major participants: InterCommunity Health Network (IHN-CCO), Samaritan Health System

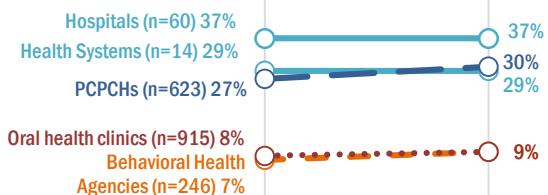
HITOC HIE Strategy

OHA's HIE Onboarding Program

leverages significant federal funding to onboard key Medicaid providers to regional HIE. (see *Office of Health IT Overview*)

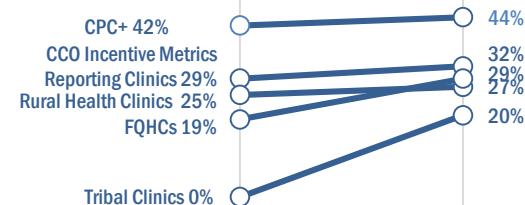
REGIONAL HIE ADOPTION RATES

2017 → 2019

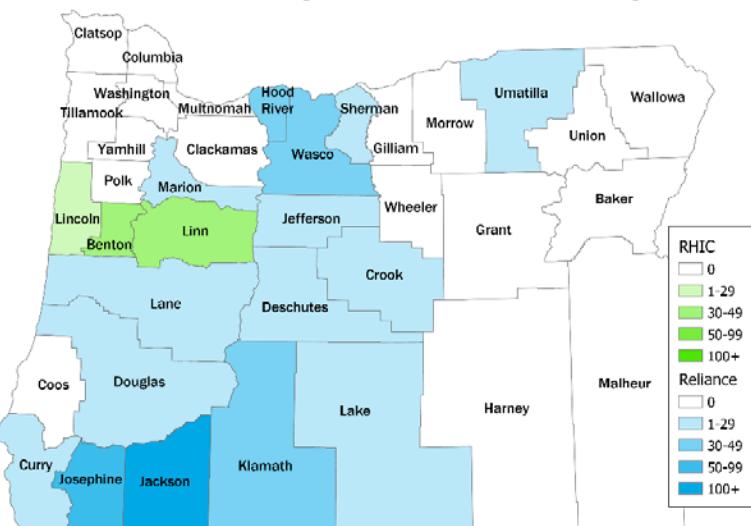


ADDITIONAL PHYSICAL HEALTH KEY CLINICS REGIONAL HIE ADOPTION RATES

2017 → 2019



Sites Connected to Regional Health Information Exchange

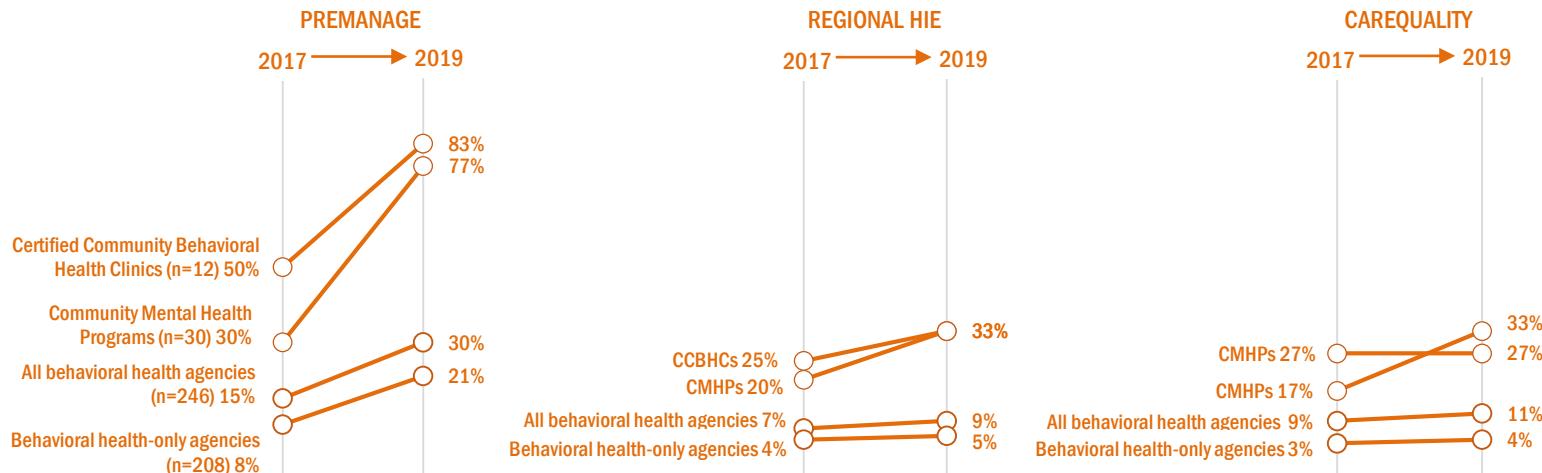


Source: Participant data self-reported by Reliance (5/31/2019) and RHIC (3/23/2018)

Behavioral health and oral health providers are using HIE; they also share important patient information with physical health providers.

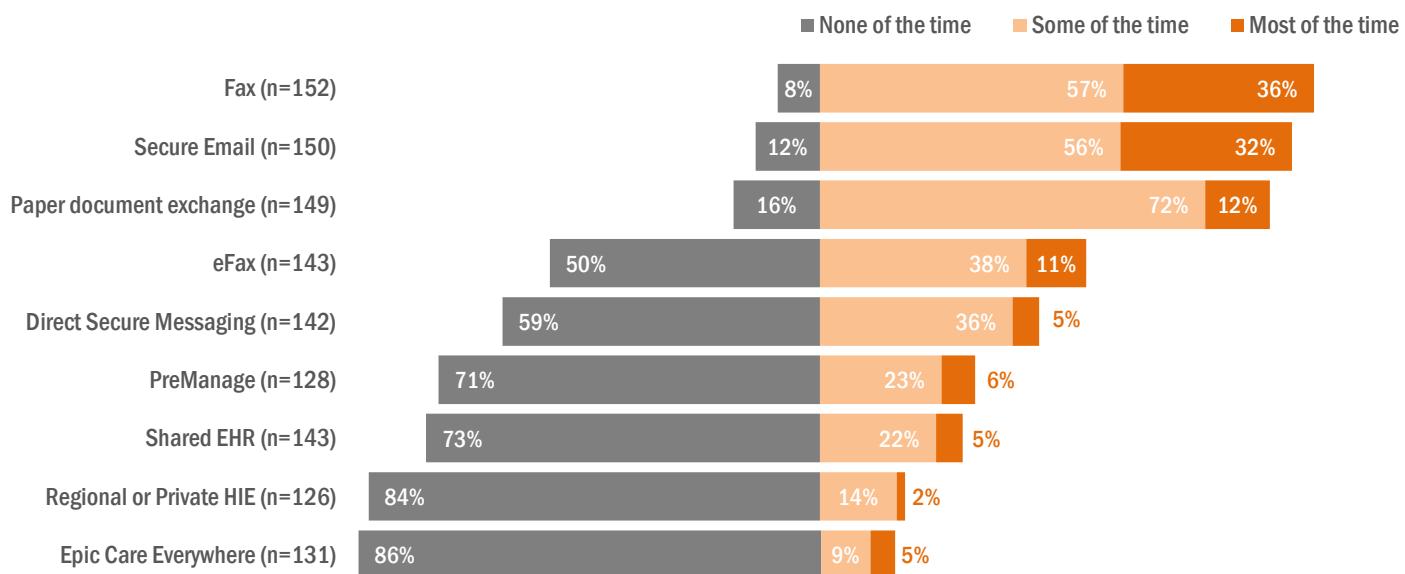
Behavioral health agencies need HIE and are investing in HIE tools.

In addition to sharing information via PreManage care guidelines, some behavioral providers have access to physical health patient information in regional HIE community health records. Some behavioral health providers are also able to share information electronically (via Regional HIE or Carequality, for example), making it available to their patients' other care providers, including physical and other behavioral health care providers.



Source: Program participation data collected by Office of Health IT
Last updated 10/10/2019

Behavioral health agencies are sharing clinical information with other behavioral health providers, hospitals, laboratories, pharmacies, payers, government agencies, and others. However, **most of this sharing is still happening via fax, secure email attachments, and paper documents.**

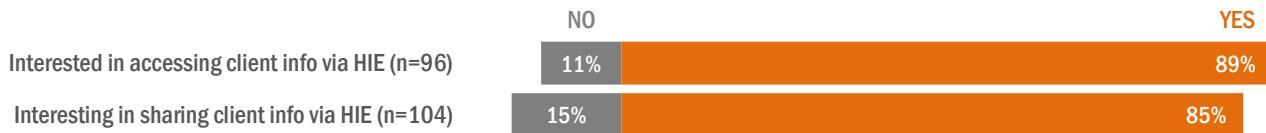


"The technical capabilities of the least technologically advanced trading partner tend to drive the exchange method." -Behavioral Health Agency

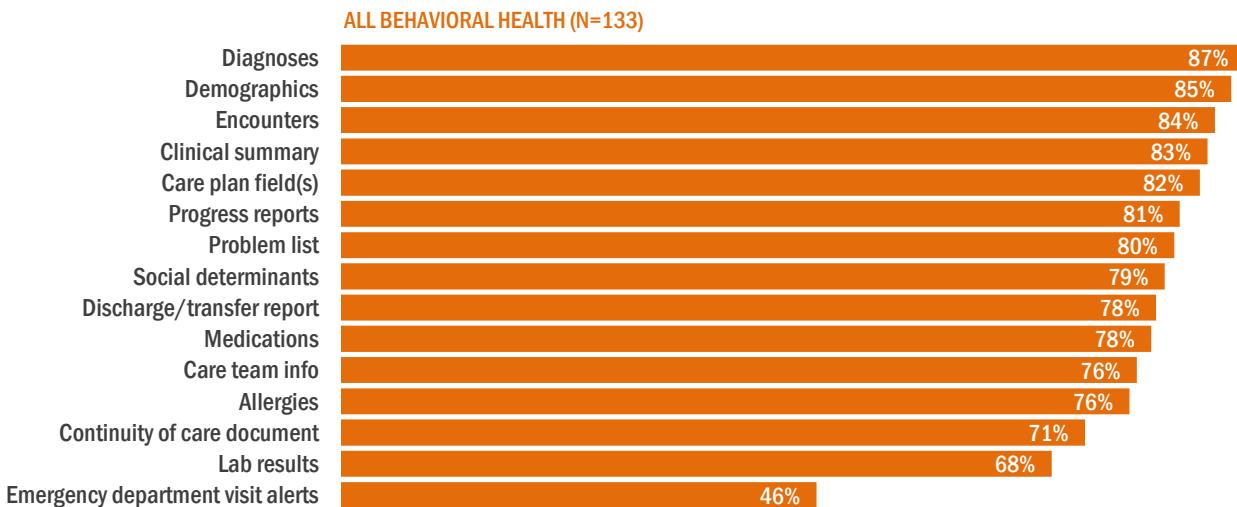
"I'm sort of amazed that we still do as much faxing as we do today, because it's such an old technology, but everybody asks for a fax." -Behavioral Health Agency

Source: Office of Health IT surveys, 2017-2019
7/11/2019

Behavioral health agencies are interested in using regional HIEs.



Behavioral health agencies capture data electronically. Many behavioral health agencies are electronically capturing the most needed patient information. Much of this information is of interest to other members of the patients' care team. Increasing behavioral health providers' access to and use of HIE would allow this information to be used by other providers.



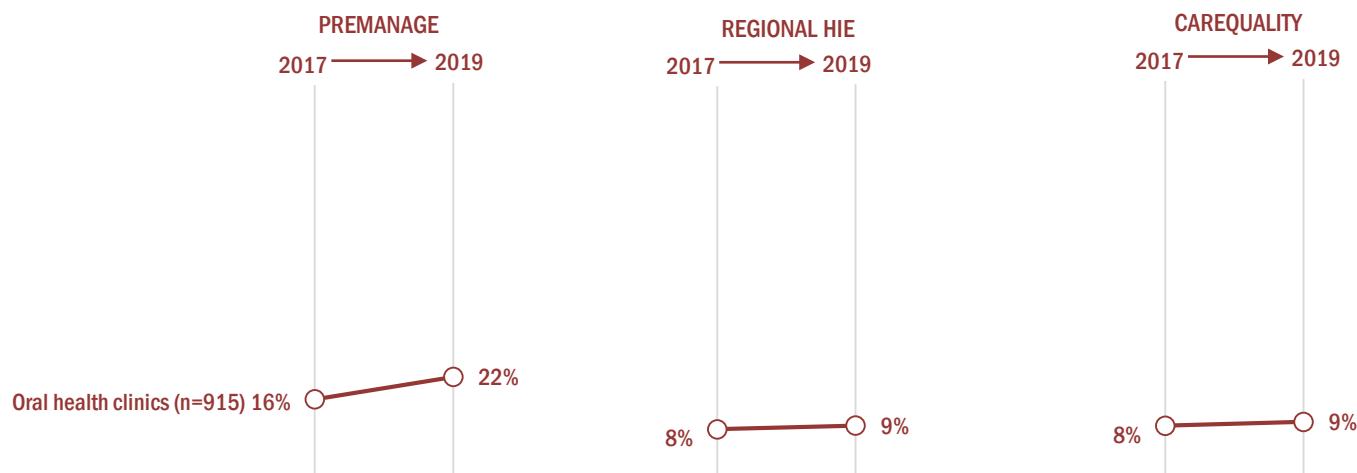
Note: Percentages for all categories are approximately 10% higher for behavioral health agencies that are part of larger physical health organizations than for behavioral health-only agencies.

Source: Office of Health IT surveys, 2017-2019

7/11/2019

More information is needed on oral health provider HIE adoption and use.

Current data shows oral health providers using HIE at very low rates. Dental Care Organizations (DCOs) use the Collective Platform (PreManage) to redirect non-urgent ED use for 'tooth pain' or oral issues to Primary Dental Provider. Though most dental clinics themselves are not active users of PreManage, DCOs are taking the lead on coordinating follow up care for members recently admitted to the ED.



Source: Program participation data collected by Office of Health IT
11/6/2019

5 Providers use multiple HIE networks; some have connected to each other.

At the national level, several query-based networks completed or began work to connect to one another. In Oregon, multiple health information networks are connected to each other, and more began discussions about future connections.

2017	EDie data flows to Reliance. CommonWell joins Carequality. Reliance eHealth Collaborative becomes a member of the Strategic Health Information Exchange Collaborative (SHIEC) Patient Centered Data Home, which connects Reliance to multiple regional HIEs outside Oregon. See <i>HIE Overview</i> .
2018	PDMP connects to EDIE, RHIC, and Reliance eHealth Collaborative. EDIE data flows to RHIC. Reliance and RHIC connect to eHealth Exchange.
2019	eHealth Exchange is considering joining Carequality. Reliance and RHIC are in discussions about connecting.

Providers use HIE tools for a wide variety of tasks:

Sharing clinical information to aid care decisions, value-based payment support, population management, analytics, and more. These needs are too complex to be met by any single tool; there is currently no such tool on the market, and it is unlikely that there will be in the next 5 years. (See *HIE Overview*)

NETWORK	Care Summary Exchange	Lab/ Radiology Results	Longitudinal Patient Record	Alerts and Notifications	E-Referrals	Analytics/ Advanced Data Services (may support VBP)	Care Plan Sharing for Complex Care Coordination
PreManage				●			
Reliance	●	●	●	●		Available regionally	●
RHIC (Regional Health Informative Collaborative – IHN CCO)	●	●	●	●	Planned*		●
Carequality	●						
CommonWell	●						
eHealth Exchange	●						
Patient Centered Data Home	●			●			

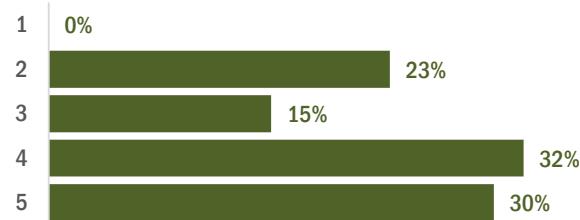
*Implemented as stand alone – planned integration as allowed by consent models.

Complex care coordination lacks HIE support.

Currently, there is no tool that focuses on complex care coordination, so most care coordination relies heavily on phone calls and faxing (with supportive health IT), making it difficult to scale and resource-intensive. The need for better tools is so significant that organizations are using PreManage to support complex care coordination, although it was not designed for that function and likely will not completely fill the gap.

All Oregon hospitals participate in more than one method of HIE (including Direct secure messaging), with two-thirds participating in four or five methods to meet their HIE needs.

NUMBER OF HIE METHODS IN USE BY OREGON HOSPITALS



Note: HIE methods include Carequality, eHealth Exchange, Reliance, RHIC, and Direct secure messaging.

One third of Oregon hospitals participate in both a regional HIE and a nationwide query-based network to meet their HIE needs.

HOSPITAL PARTICIPATION IN REGIONAL AND/OR NATIONWIDE HIE

Participate in Regional Network	Participate in Nationwide Network			Total
	Yes		No	
	Yes	33%	3%	37%
Participate in Regional Network	No	42%	22%	63%
Total		75%	25%	

Note: Regional networks are Reliance and RHIC. National networks are Carequality, CommonWell, and eHealth Exchange.

Source: Program participation data collected by Office of Health IT
10/10/2019

HITOC HIE Strategy



Oregon Provider Directory will serve as Oregon's directory of accurate, trusted provider data. It will include up-to-date contact information and health information exchange endpoints (such as Direct secure messaging addresses). By supplying this information, the OPD supports health information exchange by making it easier for providers to locate and share relevant information with other members of their patient's care team.. (see *Office of Health IT Overview*)

Nationwide HIEs

HEALTH SYSTEM	Regional HIE	Carequality	CommonWell	eHealth Exchange	EDie/ PreManage	Direct Secure Messaging
Adventist*		●			●	●
Asante*	●	●		●	●	●
Capella		●	●		●	●
Catholic Health Initiatives					●	●
Good Shepherd					●	●
Kaiser Permanente*		●		●	●	●
Legacy*		●		●	●	●
OHSU*		●	●	●	●	●
PeaceHealth*		●		●	●	●
Providence*	●	●		●	●	●
Saint Alphonsus		●	●		●	●
Salem Health*		●		●	●	●
Samaritan*	●	●		●	●	●
St. Charles*	●	●			●	●
HEALTH SYSTEMS TOTAL	29%	79%	21%	57%	100%	100%
All other hospitals (n=17)	6%	18%	29%	0%	100%	100%

*Denotes health system uses Epic and could be exchanging data via Care Everywhere

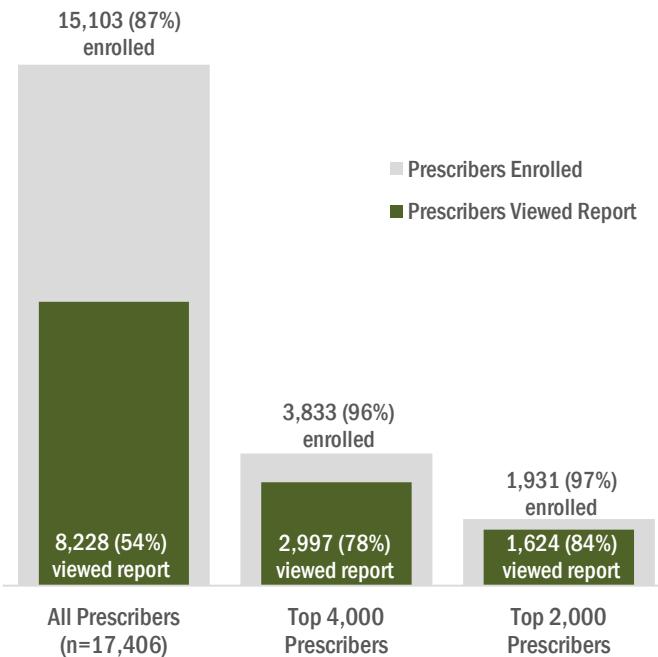
Source: Program participation data collected by Office of Health IT
10/10/2019

Providers can access opioid prescription data more easily; providers with health IT integration access it at much higher rates.

Accessing Oregon's Prescription Drug Monitoring Program (PDMP) information helps providers make more informed prescribing decisions and is a critical tool to help address Oregon's opioid crisis.

PDMP enrollment is increasing among top prescribers.

The number of PDMP reports viewed is also rising.³⁴



Prescribers and pharmacists can now access Prescription Drug Monitoring Program (PDMP) information within their health IT without having to go to a separate web portal outside their workflow ("integration"). A wide variety of entities have integrated PDMP into their EHR/HIT, including physical health key clinics. Integration allows EHRs to automatically query the PDMP and return available data for their patients.

LIVE WITH INTEGRATED PDMP ACCESS

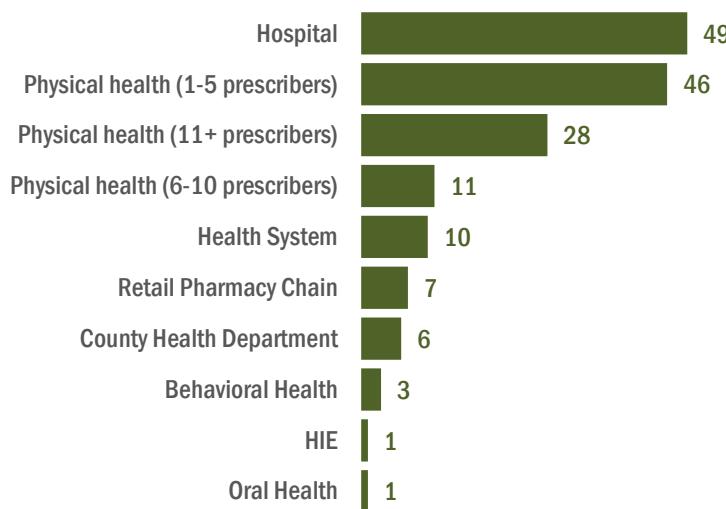
Total Prescribers	10,656
Prescribers - EDie	700
Prescribers - EHR and HIE	9,956
Pharmacy Chains	7
Pharmacy sites	367

HITOC HIE Strategy

HIT Commons: PDMP Integration Initiative

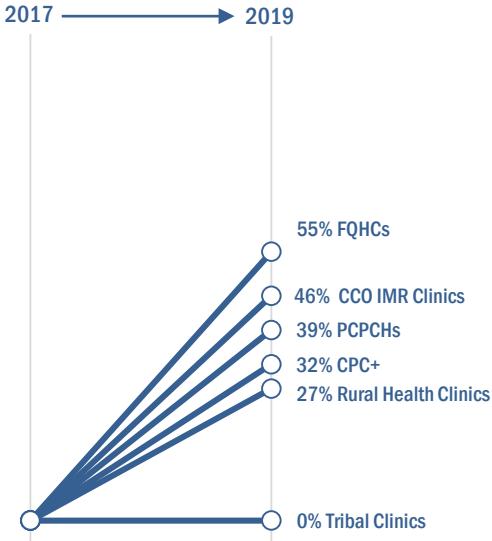
The PDMP Integration initiative connects EDie, health information exchanges (HIEs), electronic medical/health records, and pharmacy management systems to Oregon's PDMP registry. PDMP data is brought directly into prescriber and pharmacist health IT for "one-click" access to controlled substance prescription data. This initiative is jointly funded by OHA, hospitals, and health plans and is carried out by the HIT Commons.

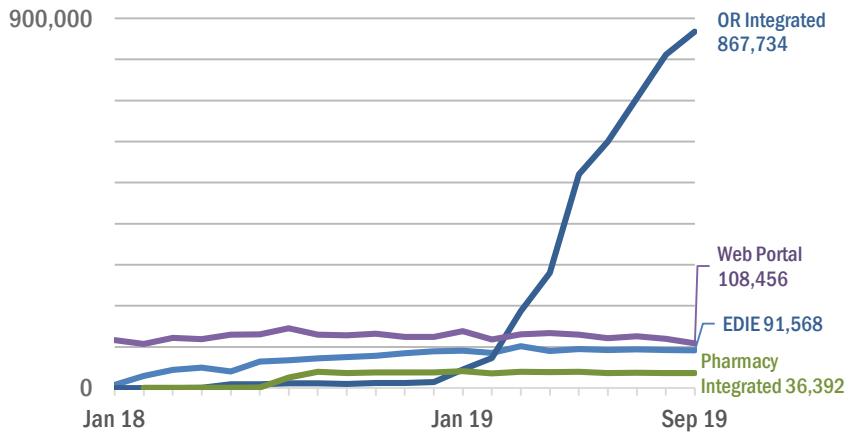
A wide variety of entities have integrated PDMP into their EHR.



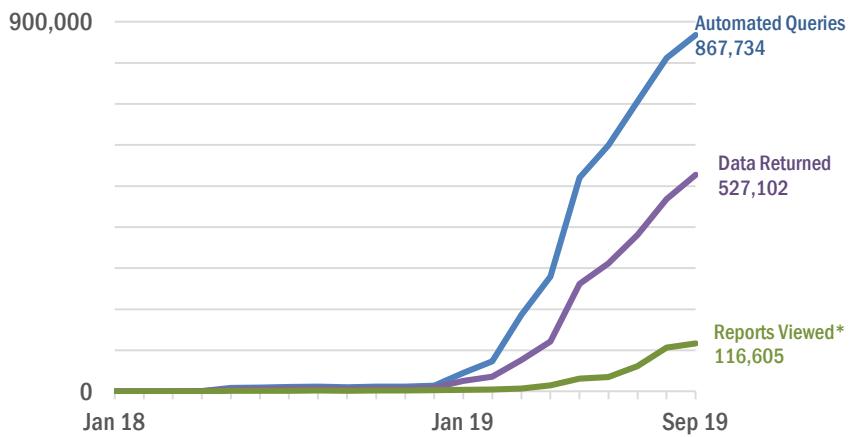
Source: Oregon Health Authority, Prescription Drug Monitoring Program
10/23/2019

PDMP-INTEGRATED PHYSICAL HEALTH KEY CLINICS





Due to their automation, **query rates via integrated EHRs/HIT have increased significantly**, while the number of queries via web portal, EDIE, and integrated pharmacies have remained steady.



These high rates of **automated queries yield significantly higher rates of data available to providers** at the point of care.

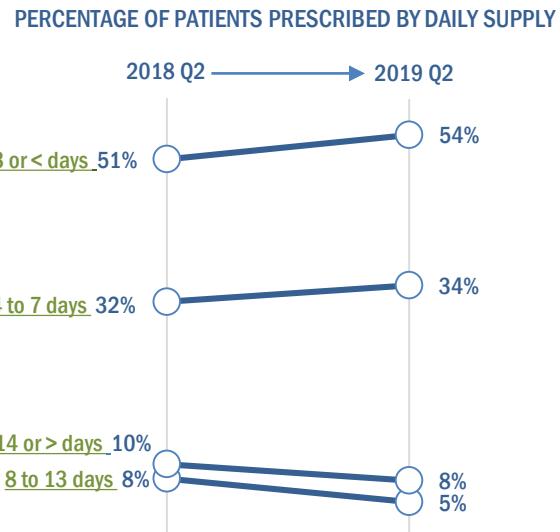
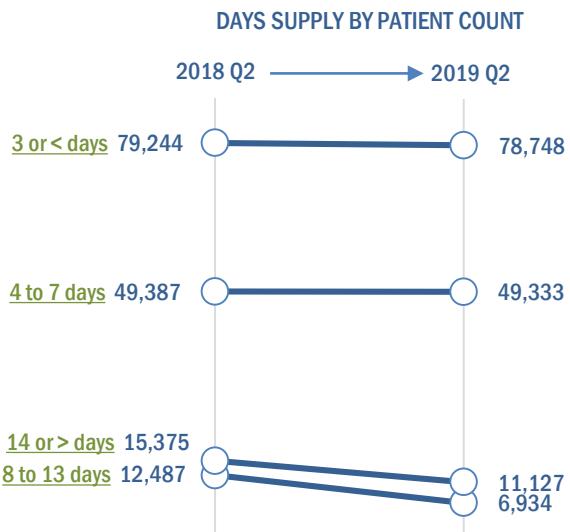
22% of prescribers are clicking on and viewing PDMP reports when a query returns PDMP data for a patient being seen. Access to PDMP data at the point of care supports providers making informed prescription decisions for improved patient outcomes.

*Reports Viewed data is for 8,208 prescribers at 107 facilities.
Source: Oregon Health Authority, Prescription Drug Monitoring Program
10/23/2019

An expected PDMP integration patient improvement outcome is the decrease in the number of patients progressing from acute to chronic opioid use.

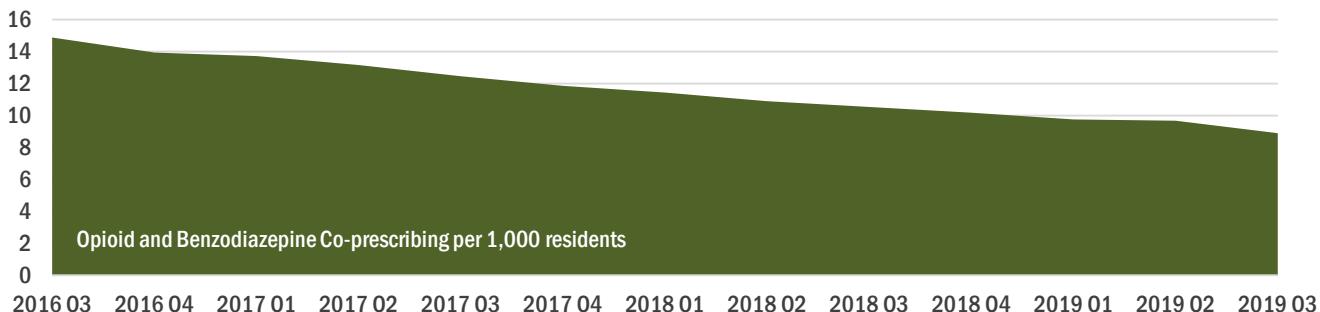
Over the last year, the number of patients receiving a less than 8 day prescription has stayed relatively flat, whereas **45% fewer patients received an 8-13 day supply and 27% fewer patients received 14 or more days supply**.

The percentage of prescriptions for **lower daily supplies (≤ 7 days)** increased by 6%, while percentage of prescriptions for **higher daily supplies (≥ 8)** significantly decreased.

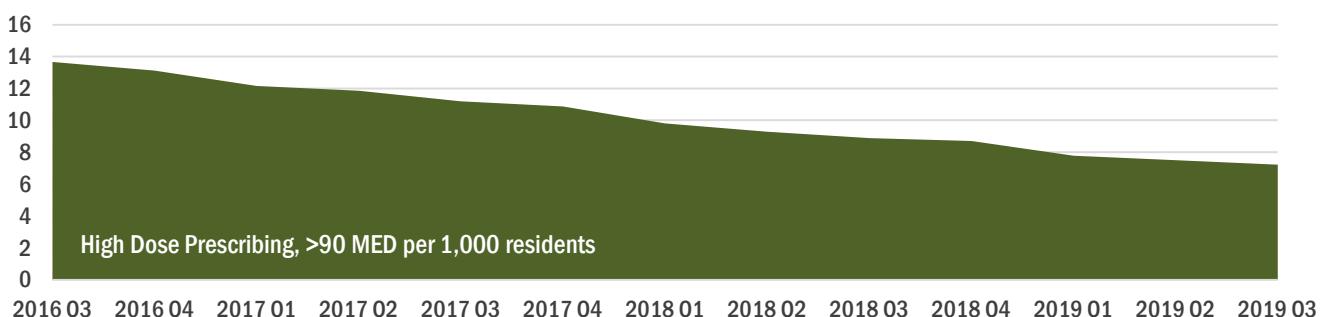


In addition to other community and agency efforts, PDMP integration has contributed to the decrease in risky prescribing.

The rate of opioid and benzodiazepine co-prescribing has decreased by 40% since 2016 and by 15% in the last year.



The rate of high dose opioid prescribing (>90 MED) has decreased by 47% since 2016 and by 18% in the last year.



Note: MED refers to Morphine equivalent dosing.

7 Providers use clinical data entered, stored, and shared by health IT to better manage populations and target interventions. This also supports the dramatic increase in value-based payment arrangements.

CCOs and health plans collect and make data available through population management tools, health information exchange tools, and analytics reports. For example, CCOs are expected to rely on HIT to support their value-based payment (VBP) arrangements³⁵, including

- administering payments to providers (for example, to calculate metrics and make payments consistent with its VBP models),
- supporting providers with data needed to manage their VBP arrangements (such as actionable data, attribution, and information on performance), and
- managing population health effectively through insight into member characteristics, utilization and risk.

Providers use analytic tools to show the impact they can have on patient populations and to better advocate for favorable value-based payment arrangements. Most VBP arrangements have focused on primary care, but behavioral health providers report investing in data analytics, population management, and care coordination tools.³⁶

CCO HIT Roadmaps. Beginning with CCO 2.0, CCOs are submitting annual HIT Roadmaps describing their efforts to support their contracted providers' HIT needs. OHA will provide a summary of these HIT Roadmaps to HITOC in 2020.

CONSIDERATIONS FOR OREGON'S HEALTH IT OVERSIGHT COUNCIL (HITOC)

HITOC will consider the questions below during its 2020 strategic plan revision. HITOC's strategic plan includes strategies for the state and for other partners and stakeholders: hospitals, health systems, health plans/CCOs, clinicians and clinic staff, technology partners, consumers/patients, and more. Thus, HITOC's considerations below may impact actions for the state as well as other partners and stakeholders.

- There is an ongoing need for **EHR adoption support in Oregon, including CEHRT adoption**, but federal EHR incentives are sunsetting/ transitioning and may not support all providers' needs. Access to robust, certified EHRs is a major driver of HIE opportunities. How will HITOC's strategies address these needs?
- **Information on oral health EHR adoption and EHR challenges is a significant gap**, although new CCO data requirements under the 2020 contracts will help to close it. How will HITOC account for this information gap in its strategies?
- As HITOC's Behavioral Health Workgroup confirmed, **behavioral health agencies need help navigating the EHR vendor market, including education, better understanding of vendors in use in Oregon, and other assistance**. How will HITOC's strategies address these needs?
- **Different organizations in Oregon face different HIE challenges** (see *HIE in Oregon: A Tale of Two Worlds*). How will HITOC address the wide variety of HIE needs and opportunities?
- **Oregon organizations must leverage a variety of HIE tools to meet their HIE needs**, which has implications for HITOC's "network of networks" approach in its 2017-2020 strategic plan. In 2017, the "network of networks" strategy centered on regional HIEs. While regional HIEs are a critical part of Oregon's HIE landscape, today organizations are also relying on other HIE tools. How will HITOC's strategies for a "network of networks" (connected Oregon) evolve given lessons learned and current conditions?
- The **standout success of EDIE/PreManage and the successes with the Prescription Drug Monitoring Program (PDMP) Integration initiative** may contain lessons for the future. How will HITOC draw on those lessons when deciding what to pursue and what to avoid?
- HITOC's strategic plan identifies priority use cases: care summary exchange, alerting, data for alternative payment models, closed loop e-referrals, and complex care coordination. Today, there are options available for some of these, although important gaps still exist. Oregon also has **significant gaps in HIE options for complex care coordination and closed loop e-referrals and faxing is still largely used**. How will HITOC's strategies narrow gaps in priority use case support?
- Health IT can help consumers/patients easily access their own health information and better engage in their care. More information is needed about **patient/consumer experiences and needs**. The need to **move clinical data among providers, CCOs/health plans, and patients will become more urgent** with likely **new federal regulations**. How will HITOC's strategies promote such sharing?
- Health equity is a critical policy priority for OHA, and health IT may provide opportunities to better identify health disparities. There is more to learn about the **relationship between health IT and health equity**. How will HITOC's HIE strategies promote health equity?
- **Health IT is a critical tool in addressing the social determinants of health**, and exploring its use raises unique challenges. How will HITOC's strategies help Oregon leverage health IT to address social determinants of health?

Oregon's coordinated care model relies on health IT to succeed.

Electronic health records (EHRs) are the foundation. They help providers collect, use and store patient information. This information can be used to participate in electronic health information exchange and care coordination, contribute clinical data for quality reporting and population health efforts, and for value-based payment arrangements. EHRs also collect screening, assessment, and demographic information, and help patients, their families, and their caregivers access their health information.

Electronic health information exchange (HIE) is critical. It helps providers share clinical data (typically stored in EHRs) for care coordination. It is also a key tool for population health management and value-based payment. In the future, HIE has the potential to better support complex care coordination, including addressing the social determinants of health.

Oregon has very high rates of EHR adoption overall, and HITOC's strategies must reckon with the remaining "digital divide."

- Physical health providers have the highest rates of EHR adoption; significantly higher than national rates.
- EHR adoption has also increased, but more modestly, among behavioral and oral health providers.
- Adoption of 2015 Certified EHR Technology, which better supports HIE needs and patients' access to their own data, is highest among physical health providers.

Oregon has seen massive HIE growth over the last five years.

- Physical, behavioral, and oral health providers are adopting HIE tools at higher rates; physical health providers show the greatest increase.
- Access to hospital event notifications has increased dramatically thanks to the widespread adoption of EDIE/PreManage, contributing to decreased emergency department visits.
- Nationwide query-based networks and vendor-driven HIE tools have increased the availability of critical information at the point-of-care.
- Regional HIE tools have contributed to improved information sharing.
- Prescription Drug Monitoring Program information is more accessible, helping providers address the opioid epidemic.
- Health systems and communities are investing in health IT tools to address social determinants of health.

THE ROAD AHEAD

HITOC's strategies must consider HIE gaps and the complex, fluid HIE environment.

- The high cost of EHRs contributes to lower EHR adoption rates for smaller organizations, so these organizations tend to have less access to HIE through nationwide query-based networks.
- Oregon providers, across the board, typically need multiple HIE tools to meet all their HIE needs.
- There are limited HIE options available today for complex care coordination.
- 42 CFR Part 2 remains a barrier to exchange, due to perceptions and the regulation itself.
- Major changes at the federal level will affect Oregon stakeholders over the next five years.

Resources

For further information please <http://healthit.oregon.gov>

If you have questions about this report, please contact OHIT.info@dhsoha.state.or.us.



ENDNOTES

EHR Data Brief

¹ With no comprehensive statewide listing of primary care clinics available, participants in the Patient-Centered Primary Care Home (PCPCH) program are used to represent physical health clinics throughout this report. For more information about Oregon's PCPCH program, visit www.PrimaryCareHome.oregon.gov

² Behavioral health agencies are those that offer at least one OHA-licensed or certified behavioral health program. Some behavioral health organizations are part of larger physical health organizations, which can impact their access to resources and incentives for adopting health IT. Some areas of the report distinguish between all behavioral health agencies and those that are not part of larger physical health organizations ("behavioral health-only agencies") to highlight the differences between those types of agencies.

³ Oral health clinics are from Oregon's covered clinics under Insure Kids Now, a national listing of Medicaid/CHIP providers and their associated practice locations. For more information, see <https://www.insurekidsnow.gov/coverage/or/index.html>

⁴ Hospital data includes Medicare and Medicaid; all others are Medicaid only due to data availability

⁵ Certified EHR Technology (CEHRT): The Office of the National Coordinator for Health Information Technology (ONC) oversees an EHR Certification Program, which sets national EHR standards. The benefits of standard data capture and interoperable exchange of information include enhanced patient safety, usability, privacy, and security. For more information, visit <https://www.healthit.gov/playbook/certified-health-it/>

⁶ The Office of Health IT collects data on participants in various state and federal programs and health information exchanges. Many of these sources contain information about EHR use. All of these data are combined to produce estimates of HIT and HIE use by various healthcare entity types.

⁷ Oregon payments total \$533.5 million to all 60 Oregon hospitals and 8,486 Eligible Professionals between the Medicaid and Medicare EHR Incentive Programs as of 10/9/2019. For publicly available payment reports, visit <https://www.cms.gov/Regulations-and-Guidance/Legislation/EHRIncentivePrograms/DataAndReports>

⁸ Medicare Access and CHIP Reauthorization Act of 2015 (MACRA): <https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/Value-Based-Programs/MACRA-MIPS-and-APMs/MACRA-MIPS-and-APMs>

⁹ Although many EHRs meet federal certification standards, those standards set minimum requirements. Like other commercial products, EHRs vary in terms of add-on features and usability as well as associated cost. The ONC has provided a Health IT Playbook to assist providers in selecting an EHR. This Playbook touches on the differences between different types of EHRs and provides links on different tools for providers. <https://www.healthit.gov/playbook/electronic-health-records/>

¹⁰ Barriers for Adopting EHRs by Physicians: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3766548/>. Benefits and drawbacks of electronic health record systems: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3270933/>. All Oregon behavioral health agencies that reported having no plans to implement an EHR were smaller agencies who indicated their size did not justify the considerable investment (OHA Behavioral Health HIT Scan): https://www.oregon.gov/oha/HPA/OHIT-HITO/C/BH%20HIT%20WG%20Docs/BH_HIT_ReportDraft.pdf

¹¹ 70% of PCPs believe EHRs have improved over the last five years: <https://med.stanford.edu/content/dam/sm/ehr/documents/EHR-Poll-Presentation.pdf>. From 2014 to 2018, EHR vendor satisfaction among registered nurses increased from 24% to 79%: <https://healthitanalytics.com/news/ehr-satisfaction-rises-usability-complaints-drop-for-nurses>. 74% of PCPs agree that EHRs increase the # of hours they work and 69% agree that it takes time away from patients: <https://med.stanford.edu/content/dam/sm/ehr/documents/EHR-Poll-Presentation.pdf>

¹² Estimates from the National Electronic Health Records Survey, a national survey of office-based physicians by the National Center for Health Statistics. For more information, visit https://www.cdc.gov/nchs/ahcd/ahcd_products.htm

¹³ Percent of CCO-contracted providers (physicians, nurse practitioners, physician assistants, podiatrists, and chiropractors) who received payments under either the Medicare or Medicaid EHR Incentive Programs from 2011-2016

¹⁴ CCO Incentive Measures Reporting Clinics are Medicaid clinics that report their CCO incentive measure data electronically through their EHR.

¹⁵ Comprehensive Primary Care Plus (CPC+) is a national advanced primary care medical home model that aims to strengthen primary care through regionally-based multi-payer payment reform and care delivery transformation. For more information, visit <https://innovation.cms.gov/initiatives/comprehensive-primary-care-plus>

¹⁶ Rural Health Clinics (RHCs) are federally-recognized primary clinics in underserved, non-urbanized areas. For more information, visit <https://www.cms.gov/Center/Provider-Type/Rural-Health-Clinics-Center>

¹⁷ Federally Qualified Health Centers (FQHCs) are community-based health care providers that receive funds from the HRSA Health Center Program to provide primary care services in underserved areas. They must meet a stringent set of requirements, including providing care on a sliding fee scale based on ability to pay and operating under a governing board that includes patients. For more information, visit <https://www.hrsa.gov/opa/eligibility-and-registration/health-centers/fqhc>

¹⁸ "Tribal" represents Oregon's nine recognized tribes and the Chemawa Indian Health Center.

¹⁹ Eligible Professionals are physicians, nurse practitioners, certified nurse-midwives, dentists, pediatric optometrists, naturopaths, and physician assistants who practice in a Federally Qualified Health Center (FQHC) or Rural Health Center (RHC) that is led by a physician assistant.

²⁰ Percentages shown here are weighted by number of beds. 51% of Oregon's 60 hospitals are using Epic, while 15% use Cerner, 10% use McKesson, and fewer than 10% use each of the remaining vendors.

²¹ When assessing the current landscape of EHRs using EHR Incentive Program data, only attestations since program year 2013 were considered due to the greater reliability of more recent information and changes to Stage 1 Meaningful Use requirements that were implemented in 2013.

ENDNOTES

²² This chart considers the most recent attestation in each program year of all Eligible Professionals who have participated in the Medicaid EHR Incentive Program since 2013. It estimates the current CEHRT year landscape in each year based on the most recent available information for all providers. If a provider did not participate in a particular year, their most recent attestation information is carried over from a previous year. Some providers may have adopted 2015 CEHRT after ending their participation in MEHRIP which would not be reflected in these rates.

²³ Behavioral health EHR information is largely based on the OHA behavioral health HIT scan, conducted from 2017-2019. Responses were self-reported with a 71% response rate and combined with other existing Office of Health IT data sources to obtain a fuller assessment of behavioral health EHR use, though information gaps still likely remain. For more information, refer to the Behavioral Health IT Workgroup and BH HIT Scan materials at <https://www.oregon.gov/oha/HPA/OHIT-HITOC/Pages/Behavioral-Health-HIT.aspx>

HIE Data Brief

²⁴ OHA and the Oregon Health Leadership Council partnered to launch Oregon's Emergency Department Information Exchange (EDie) with all Oregon hospitals agreeing to implement EDie by the end of 2014.

²⁵ Regional HIEs in Oregon in 2014 included Bay Area Community Informatics Agency in Southern Coast, Central Oregon HIE, Gorge Health Connect, Jefferson HIE, and the Regional Health Information Collaborative (RHIC) was in development. See Oregon's "HIT Business Plan Framework" (appendix B): <https://www.oregon.gov/oha/HPA/OHIT/Resources/Business%20Plan%20Framework.pdf> and OHA's "2015 Oregon Coordinated Care Organizations' HIT Efforts" report: <https://www.oregon.gov/oha/HPA/OHIT/Resources/CCO%20HIT%20Summary%20Report%20July%202015.pdf>

²⁶ Collective Medical Technologies recently changed the name of EDie/PreManage to The Collective Platform. This report uses the name EDie/PreManage due to its historical use and familiarity with the name.

²⁷ Oregon HIT Environment Assessment, 2009; Health Information Exchange (HIE) Activities Inventory (an evolving list – October 30, 2009): https://www.oregon.gov/oha/HPA/OHIT-HITOC/Documents/OregonHIE_Activities_103009P.pdf

²⁸ Efforts around "community information exchange" and the social determinants of health are developing and emerging in Oregon and around the country. The HIT Commons, a public-private partnership, is working on efforts to further develop CIE in Oregon, to link health care and social services sectors through technology. CIEs typically include a social services resource directory and referral management. For more information, see: <http://www.orhealthleadershipcouncil.org/currently-in-development/>

²⁹ Both ONC and CMS have proposed changes to federal rules related to interoperability, which have been released in draft, but not yet finalized. For more information, see: <https://www.healthit.gov/topic/laws-regulation-and-policy/notice-proposed-rulesmaking-improve-interoperability-health> and <https://www.cms.gov/newsroom/fact-sheets/cms-advances-interoperability-patient-access-health-data-through-new-proposals>. For further information on the Trusted Exchange Framework and Common Agreement, please see: <https://www.healthit.gov/topic/interoperability/trusted-exchange-framework-and-common-agreement>

³⁰ Medicaid Dental Care Organizations (DCOs) mainly use the platform to redirect non-urgent ED use for oral issues to a patient's primary dental provider. The dental clinics themselves are not active users but DCOs take the lead to coordinate follow up care for members recently admitting to the ED. This work flow has been identified by DCOs as the best use of time and resources in the dental field, rather than to onboard the clinics themselves.

³¹ Oregon's Department of Human Services is responsible for programs that support Oregonians in need of services related to aging and disabilities, including intellectual and developmental disabilities. These programs are managed by local field offices or contracted to local Area Agencies on Aging.

³² For more data on the impact of EDie/PreManage, see <http://www.orhealthleadershipcouncil.org/edie-premanage-data-and-reports/>

³³ Care Guidelines are a part of PreManage intended to deliver brief, critical information to emergency department providers at the point of care. They include care recommendations, explanations of past coordinated care efforts, pain management guidelines, and other information.

³⁴ Chart displays the top two thousand, top four thousand, and total number of prescribers who wrote prescriptions for controlled substances in Oregon in July-September of 2019, along with the percent who were enrolled in the Prescription Drug Monitoring Program and the percent who viewed a report from the PDMP.

³⁵ See OHA's CCO 2.0 Request For Applications, section on HIT: <https://www.oregon.gov/oha/OHPB/CCODocuments/08-CCO-RFA-4690-0-Attachment-9-HIT-Questionnaire-Final.pdf>

³⁶ From the Behavioral Health HIT Scan – finding #4: "In addition to EHRs, a subset of behavioral health agencies have invested in data analytics (22%), population management (10%), and care coordination (13%) tools (see chart "Other IT in Use (Non-EHR)" on page 10). As in the physical health system of care, behavioral health providers are increasingly being required to report on various metrics and participate in value-based payment, and so are increasingly prioritizing their data needs." https://www.oregon.gov/oha/HPA/OHIT-HITOC/BH%20HIT%20WG%20Docs/BH_HIT_ReportDraft.pdf

This document was created for Oregon's Health IT Oversight Council (HITOC) to support its 2020 strategic planning work for electronic health information sharing/exchange (HIE). The "two worlds" model does not account for all the nuances of Oregon's HIE gaps, but it may help readers understand some important dynamics driving differences in HIE access.

HITOC's Original HIE Vision

When HITOC's HIE planning efforts started in 2009, there were nine regional HIEs in Oregon, and HITOC envisioned more robust regional HIE development (see *HIE 101*). This would be supported by a few key statewide enabling services, like provider directories or other tools.

- Hospitals, primary care, specialists, behavioral health, and oral health providers would connect to the HIE in their region, allowing local care teams to coordinate care for their shared patients.
- These regional HIEs would connect to one another, and data would flow seamlessly across the state to support patients when they received care outside their home communities.
- Smaller providers would have, at a minimum, baseline HIE services like rich community health records.
- Larger organizations with more resources could add analytics and other features.

Ten years later, HIE has become much more widespread and accessible to all types of providers in health care—but the landscape is more complex.

Today's HIE Landscape

Regional HIEs play an important role, but are not available in every Oregon region

Due to many factors, including complexity and cost, many regions were not able to create HIEs. Some regions did form HIEs, several of which were consolidated to serve larger regions. These HIEs provide a variety of HIE services that support multiple high-priority use cases and are EHR-agnostic, which make them critical resources for communities across Oregon (see 2019 HIE Data Report).

Today, there are two main regional HIEs in Oregon, about **53%** of Oregon counties have a regional HIE available. These HIEs support nearly all types and sizes of providers, as well as **37%** of Oregon hospitals.

National and EHR-Based Networks have enabled many large organizations to share information, but are not accessible to many smaller or diverse types of providers

Today, providers on dominant EHR vendors (see *2019 Health IT Report to Oregon's Health IT Oversight Council (HITOC)*) who participate in national query-based networks¹ or major vendor-based networks² can access a considerable amount of information at the point of care with very little effort via clinical document exchange.

These networks have some challenges with patient match rates and interoperability, and clinical document exchange has significant limitations, including limited use cases and availability is typically dependent on a provider's EHR vendor (see *HIE 101*). However, organizations with access to these networks may find less value in participating in regional HIEs or other efforts that are more complex or costly.

¹ Carequality, Commonwell, and eHealthExchange

² Epic's CareEverywhere

When these key providers are absent from regional HIE networks, it limits the value of regional HIE for other providers. Many providers cannot access the national query-based networks or vendor-based networks, since access to those networks typically requires them to have an EHR vendor that is participating. The result is that large provider organizations connect to each other, but smaller or more diverse provider types are left unconnected.³

The “Two Worlds”

Due largely to differences in access to resources, including but not limited to federal incentives, the envisioned community-based, equitable, and rich HIE environment has not materialized statewide. Instead, the Oregon landscape today is divided into the haves and the have nots, or “World A” and World B” in the table below.

Again, this model does not account for all the nuances of Oregon’s HIE gaps, and not all providers fit neatly into World A or World B. However, the model describes important dynamics that may help readers understand Oregon’s HIE landscape.

	World A Organizations	World B Organizations
EHRs	Use dominant EHR vendors ⁴	Use non-dominant EHR vendors or may lack EHRs
	Use certified EHRs (CEHRT)	Less likely to use CEHRT
	More likely to have 2015 CEHRT	Less likely to have 2015 CEHRT
Federal Incentives	Received significant benefit	May have received little to no benefit
HIE	Can access national and/or vendor driven query-based networks	Cannot access national and/or vendor driven query-based networks
	Direct secure messaging within EHR	May have Direct secure messaging within EHR
	Likely to participate in EDIE/PreManage	Likely to participate in EDIE/PreManage <ul style="list-style-type: none">• Primary care and behavioral health Less likely to participate in EDIE/PreManage <ul style="list-style-type: none">• Oral health, specialty care, and social services organizations
	May participate in regional HIE; directly or sponsored	May participate in regional HIE; more likely to need sponsorship
Common types of providers	Larger physical health organizations like hospitals, health systems, large clinics Exceptions include:	Smaller physical health organizations like: <ul style="list-style-type: none">• Independent clinics• Specialists

³ EDIE/PreManage is an exception – connecting all hospitals and many providers regardless of the EHR they use. This tool is available broadly and is focused on a narrow set of high value data related to hospital event notification.

⁴ See 2019 Health IT Report to Oregon’s Health IT Oversight Council (HITOC) for a discussion of dominant EHRs in Oregon and HIE use in Oregon.

	<ul style="list-style-type: none"> • Most Oregon Federally Qualified Health Centers (those that use OCHIN Epic) • Clinics that access EHR via “community connect” model or hosted EHR 	<ul style="list-style-type: none"> • Some rural/frontier health clinics • Culturally/linguistically specific clinics • Some tribal clinics
	Some large behavioral and oral health providers, typically part of health systems or using a physical health EHR	Most behavioral and oral providers; social services organizations
Technical resources	Have technical staff, resources, expertise	Likely to lack technical staff, resources, and expertise

Consequences of the Two Worlds

Everyone is affected

World B organizations and their patients are more directly affected by lack of HIE access and may lose out on many of the benefits of HIE (see 2019 HIE Data Report, Executive Summary).

World A organizations are affected as well. For example, even if a patient’s primary care provider is part of a health system in World A, the patient’s specialists, behavioral health, oral health, and social services providers are all likely to be in World B. These patients may not benefit from efficient care coordination, which affects both World A and World B, because the organization with the least access to HIE drives the method of communication. Thus, World A and World B are less able to coordinate care when a patient’s care team has members in both worlds, which is often the case.

Because HIE is an important component of efficient population management and value-based payment arrangements, it may be more difficult for World B providers to participate in those efforts, which limits Oregon’s ability to achieve system-wide transformation.

Access to care and health equity are impacted

Again, World B contains many members of the care team, including specialists, behavioral health providers, social services providers, and more. It also includes many underserved and health professional shortage areas, some rural/frontier areas, and some culturally competent and/or linguistically specific care. Supporting World B providers is critical to supporting patient choice and making sure all Oregonians can access appropriate care.

Working towards solutions

Ultimately, each “world” may need different support or strategies to achieve its full potential. The *2019 Health IT Report to Oregon’s Health IT Oversight Council (HITOC)* includes some further information in the *Key HIE Concepts for Oregon* section and questions for HITOC to engage with in the *HITOC Considerations* section. Exploring strategies for solutions addressing the two “worlds” will be part of HITOC’s 2020 strategic plan revision process.

Stay Connected

You can learn more about HITOC here: <https://www.oregon.gov/oha/HPA/OHIT-HITOC/Pages/index.aspx>.

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Get involved with Oregon Health IT

Office of Health Information Technology: HealthIT.Oregon.gov

Join the listserv: bit.ly/2VYgoDB

Last Updated November 2019

The Oregon Health Authority and Health IT: Health Information Exchange Overview



Health information exchange (HIE) means sharing health information electronically. It can also refer to organizations that share health information electronically, like a regional HIE. This document is a primer on major HIE concepts and selected major national, regional, state, and local HIE efforts. It was created for Oregon's Health IT Oversight Council (HITOC) to support its 2020 strategic planning work, as a companion document to the *2019 Health IT Report to Oregon's Health IT Oversight Council*. This document will be updated regularly.

Electronic health information exchange (HIE) began largely to get electronic versions of test results and other health-related data into clinic information management systems. At that time, health IT vendors used diverse and proprietary technical standards, and health IT systems were disparate and disconnected. HIE offered a way to get more complete information about the care the provider ordered for its patients. For example, HIE helped providers electronically receive the results from lab tests or radiology studies their own clinicians ordered.

About 15 years ago, HIE began to transform into a more mature tool for care coordination. Providers began to seek not only health information about the care they ordered, but care their patients received from other providers that the original provider otherwise would not have known about. That led to the emergence of four primary roles for HIE:

- 1. Interconnectivity.** HIE tools continue to be a key means for connecting systems. HIE tools help organizations avoid custom, point-to-point connections, where each provider must create a separate connection to every other system, service, and provider they want to communicate with. While HIE is still used for delivery of orders and results (e.g., connecting a lab system to an EHR), HIE tools also enable connecting to high-value data, public health reporting, connections to health registries, and more.
- 2. Clinical Document Exchange.** National efforts and federal regulations have established a minimum set of data elements (currently the “Continuity of Care Document” or CCD but will be expanded to the US Core Data for Interoperability, or USCDI, the under proposed federal regulations) that providers should exchange to coordinate care. The emergence of nationwide

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information networks was largely prompted by providers' desires to retrieve this minimum data set for their patients from other providers across the community, the state, or the country.

3. **Creating a Community Health Record.** Regional HIEs can consolidate a patient's health information into a community health record, which is a more complete picture of the care a patient is receiving, unlike the view within a given clinic's EHR, which is largely limited to the care provided by that clinic or hospital. Consolidating patient information also creates new opportunities for analytics, population management, and value-based payment arrangements.
4. **Encounter Notifications.** HIE can be used to alert primary care providers, health plan care coordinators, and other members of the care team about emergency department visits, hospital admissions, encounters resulting from patient self-referrals, etc. These notifications help make providers more aware of the health problems, emergency needs, and poorly managed chronic conditions of their patients and can help providers ensure follow up after hospital or emergency care. Encounter notifications also allow providers to be more accountable for all the care their patients receive.

HIE is a foundational component of many of HITOC's strategies. See *2019 Health IT Report to Oregon's Health IT Oversight Council, HIE Data Report Executive Summary* for an overview of the role of HIE in health system transformation. **HITOC listed five Priority Use Cases for HIE in Oregon's 2017-2019 Strategic Plan For HIT/HIE: care summary exchange, closed-loop referrals, complex care coordination, alert notifications, and data for value-based payment models.** In this brief, HIE efforts that support HITOC's Priority Use Cases are

Query-Based Clinical Document Exchange¹

Overview of query-based clinical document exchange

There are currently three main nationwide networks and several vendor-based networks that concentrate on **exchanging clinical documents**. The main clinical document these networks exchange is a Continuity of Care Document (CCD). These networks do not offer a community health record or provide encounter notifications.

Clinical documents are snapshots of summary data about a patient at a point in time, or associated with a particular care encounter, such as a hospital admission or referral. Clinical documents are valuable because they:

- have persistence (they continue to exist intact even after exchanged),
- are stewarded (maintained by an organization entrusted with their care, such as a hospital),
- can be authenticated (may be legally signed by a provider to establish authenticity),
- have context (they establish a consistent context for content, such as a hospitalization),
- have wholeness (authentication and context apply to all contents as a whole), and
- are human readable (include readable content, along with optional computable content).

The most commonly exchanged document, the CCD, includes:

- demographic data about the patient,

¹ Query-based clinical document exchange, as available through the nationwide query-based networks and vendor-driven query-based networks covered in this section, supports HITOC Priority Use Case #1: Care Summary Exchange.

- a list of current medications,
- a list of medication allergies,
- a list of immunizations, and
- a list of problems and chronic conditions.
- May include limited family or social history, a list of procedures, and recent vital signs or lab results.

Query-based networks have a common workflow: they depend upon a provider initiating the exchange by requesting data on a specific patient (the “query” in “query-based”). The provider searches the network for a matching patient using patient demographics, such as name, gender, and date of birth. If a match is found, there may be a CCD or other clinical document associated with that patient. In that case, the provider can retrieve, view, and (optionally) save the clinical document in the provider’s EHR or HIE portal.

Nationwide query-based networks

eHealth Exchange, the CommonWell Health Alliance, and Carequality are the three main nationwide query-based networks in use today. They exchange clinical documents, most commonly CCD documents.

eHealth Exchange was the first of the nationwide networks, emerging as a result of the federal government’s Nationwide Health Information Network initiative that began in 2004. Primary participants are federal agencies, large health systems, hospitals, and regional HIEs, largely due to its relatively high cost. eHealth Exchange is a **peer-to-peer network**, which means that:

- The network has no centralized index of patients or documents (and therefore, houses no protected health information (PHI))
- A querying participant must know where the patient has been seen, or query all participants
- Most participants regularly query all other participants in some limited geographic area.

CommonWell formed in 2013 as a non-profit collaboration of EHR vendors. Only EHR vendors who help fund CommonWell may participate. An individual provider cannot join Commonwell directly. Like eHealth Exchange, providers search for patients using demographics and retrieve documents on matched patients.

Unlike eHealth Exchange, CommonWell maintains a **Master Patient Index** that participants can search for matches, and **Record Locator Service** (an index of documents that may be retrieved when matches are found). This means CommonWell does store PHI. The documents themselves are held in the other participants’ EHRs and must be retrieved from those EHRs. The patient index makes it easy for a provider to search for documents available from all network participants, and still allows them to retrieve only the clinical data of interest (e.g., a summary from a specific hospital admission).

Carequality formed in 2014 as another non-profit collaboration of EHR vendors. It describes itself as a network of networks, linking the networks of its participants. Participants are primarily EHR vendors, with some personal heath record vendors and community HIEs. An individual provider cannot join Carequality directly—access depends on the provider’s EHR vendor or community HIE participation.

Carequality is a **peer-to-peer network** like eHealth Exchange.

Advantages of nationwide query-based networks

The greatest advantage of these networks is their nationwide scope and high adoption rates. As many as 70% of US hospitals participate in one or more nationwide, query-based document exchange network, enabling those participants to retrieve critical information from across the country. For Carequality and CommonWell, a provider must take additional action to participate or “switch it on” even after their EHR vendor has joined (implemented) the network; for eHealth Exchange, each individual provider must actively join the network.

Clinical documents provide a convenient collection of health information for exchange. The properties of context and wholeness make them easy to maintain as “foreign” or “external” clinical information within an EHR, and “stewardship” and “authentication” allow them to be trusted.

Limitations of nationwide query-based networks

Providers must join and search all three networks to get the best chance of getting the information they seek, although this may be changing. Nearly every major EHR for hospitals and ambulatory settings participates in CommonWell or Carequality, but few participate in both. The two EHRs with the largest market share, Epic and Cerner, belong exclusively to different networks, and no EHR vendor may participate in eHealth Exchange. Because each network is governed by a different data use agreement, health systems and HIEs must conform to the requirements of each one.

In 2017, CommonWell announced that it would join Carequality, effectively linking vendors that participate in the two initiatives in an attempt to mitigate this issue. It is not clear how much data flows across the network boundaries today. eHealth Exchange is also considering joining Carequality.

Users are concerned about the potentially low patient matching rate—significant data might not be located due to the need for unambiguous patient matches based on limited patient information.

The workflow of a query-based network does not meet all clinical needs. Today, eHealth Exchange has the technical means for encounter notification, but it is not commonly implemented. CommonWell and Carequality have no mechanism for encounter notification, although Carequality is exploring creating one.

As peer-to-peer networks, eHealth Exchange and Carequality may not scale to very large volumes of data. For example, if a hospital wishes to retrieve care summaries for all of its daily admissions and queries all eHealth Exchange and Carequality participants, it is potentially placing thousands of queries for every patient, most of which result in no returned data.

CommonWell addresses this limitation using a Master Patient/Person Index (MPI) and a Record Locator Service, which allow a provider’s system to search CommonWell in total – rather than each one of its participants individually – for a matching patient and determine which CommonWell participant has health records for that patient.

Finally, the advantage of the clinical document is also a limitation. Clinical documents may not always meet the “minimum necessary” test for providers. It is not possible, for example, to only retrieve a medication list, or only immunizations, without retrieving all the other clinical data from the same context.

Vendor-driven query-based networks

Health IT vendors, especially EHR vendors, have created proprietary networks that allow their customers to exchange clinical documents with fellow customers who elect to participate. Vendor-driven networks are usually closed and available only to customers of that vendor. However, they can be useful exchange mechanisms in markets dominated by a single vendor or for health systems that need an easy way to exchange information across facilities.

Epic's Care Everywhere is the largest and most well known vendor-driven, query-based network, connecting potentially all Epic customers nationwide. Many Epic users use Care Everywhere to query for documents from other Epic users within their service area for each encounter or admission. Care Everywhere uses technologies very similar to those used by Carequality.

Other Selected National HIE Efforts²

There are several other national efforts that either have a footprint in Oregon or are expected to affect Oregon in the future.

Direct Secure Messaging (also Direct Project, Direct Messaging, or DSM) is a standard created by the Office of the National Coordinator for HIT (ONC) to send information securely to someone the provider knows. The technology is based on the same technology as email and uses “private key infrastructure” to establish trust and encrypt health information. To the user, Direct messaging is nearly indistinguishable from email, except that users can only send messages to other Direct messaging users, and then only if that user has a Direct address with a trusted vendor. Direct messages can include attachments such as CCDs, test results, even larger files such as x-rays and echocardiograms.

Direct messaging is done through EHRs or through companies called Health Information Service Providers (HISPs) that specialize in Direct messaging. ONC requires that Certified EHRs support Direct. Meaningful Use requires providers to use Direct for exchanging documents during transitions of care.

DirectTrust was formed by member HISPs to create policy and procedure requirements to be a trusted HISP and manage the exchange of digital certificates needed to enable exchange among HISPs.

² Direct Secure messaging can help support HITOC Priority Use Case #1: Care Summary Exchange and #2: Closed-Loop Referrals, although it is not a complete solution to #2. Patient-Centered Data Home supports HITOC Priority Use Case #4: Alert Notifications. The planned Trusted Exchange Framework and Common Agreement functionality is not yet determined, but it will almost certainly support HITOC Priority Use Case #1: Care Summary Exchange, and possibly HITOC Priority Use Case #4: Alert Notifications.

Patient Centered Data Home (PCDH) was created by the Strategic HIE Collaborative (SHIEC) to address some of the limitations of query-based networks. PCDH provides encounter notifications for encounters that occur outside of a patient’s “home” health system or HIE to their “home” health system or HIE (determined by the patient’s home address). A provider can then use other means, such as a query-based network, to retrieve clinical information about the encounter. Because the notification comes with a richer set of patient information, it overcomes patient matching problems inherent in query-based networks. To date, 45 HIEs across the US are participating in PCDH.

The 21st Century Cures Act directed the federal Office of the National Coordinator for Health IT (ONC) to develop or support a Trusted Exchange Framework for trust policies and practices and a common agreement for exchange between health information networks. ONC responded by releasing the **Trusted Exchange Framework and Common Agreement** (TEFCA) in draft form in early 2018 and a second draft in mid-2019.

TEFCA seeks to establish a means for linking networks (such as nationwide query-based networks, vendor-driven query-based networks, or community HIEs) to exchange data nationwide under a single data use agreement, the Common Agreement. Participation in TEFCA will be voluntary. Its primary use case is query-based clinical document exchange. Unlike the nationwide networks, it also seeks to provide a means for sending unsolicited data, like encounter notification, and a means of consumer access.

Regional or Community-Based HIE (“Regional HIE”)³

Regional HIE Overview

Regional HIE began more than twenty years ago to share information locally on a community level—where most of the care was, and still is, delivered. HIE still flourishes in regional and community efforts, with some important benefits not provided by nationwide networks.

Regional HIE was created to connect systems and distribute health information locally, in the absence of well adopted technical standards and ambiguous interpretation of the standards that existed. As such, it was the “glue” between disparate systems created by different vendors. Today, regional HIE still fills that critical role. It has also expanded beyond simple connectivity to become a hub for patient-centered health information.

For information about **regional HIE efforts** in Oregon, see the *2019 Health IT Report to Oregon’s Health IT Oversight Council*.

Regional HIE Advantages

Regional HIEs can normally **match greater than 90% of received data with a patient**. Regional HIE uses demographic information for a patient to establish a unique profile for each patient, stored in a Master Patient Index (MPI), that uses algorithms to match health information to that identity and manage data inconsistencies.

³ Regional HIE has the potential to support all HITOC Priority Use Cases. In Oregon today, the primary HITOC Priority Use Cases supported are #1: Care Summary Exchange, #2: Closed-Loop Referrals (not available in all areas), and #5: Data for Value-Based Payment Models.

Regional HIEs typically **create a consolidated collection of health information showing all the care an individual received in the community (“community health record”)**. Like the record in an EHR, the community health record is organized around the patient, rather than encounters or episodes of care. Unlike the EHR, the community health record includes data from all the providers who participate in the regional HIE.

Some regional HIEs collect health information in a single repository, sometimes called a Clinical Data Repository or CDR. This **centralized model responds more quickly to requests** (data does not need to be retrieved and consolidated in real time) and **is robust to network outages** (information from all providers is available even if some provider systems are unreachable). **From the CDR, an HIE can create a data warehouse** that can be used for analytics, potentially supporting value-based payment models and population management.

Other regional HIEs use a federated model. Rather than pulling patient data in, these models leave the data where it is, and store its location in a Record Locator Service (RLS). When a provider requests the community health record for an individual, the HIE accesses the RLS, retrieves the information in real time, and presents it as if it were a single record. This model allows each holder of patient data to maintain control over that data. However, it is slower and more vulnerable to network outages. It also leaves analytics activities to each individual provider, hospital, or health system, or it requires other means of HIE for analytics.

Regional HIE Limitations

While regional HIE often carries a greater volume of more detailed health information than nationwide networks, **its scope is regional**. The MPI will only manage identities for regional patients, and the community health record will only include information for encounters within the region and among HIE participants.

Regional HIEs sometimes address this by participating in one or more nationwide query-based networks and 45 have joined the national Patient-Centered Data Home.

Regional HIEs and their community health records only include data that is shared with them by labs, clinics, ancillary services, hospitals, etc. Regional HIEs thus rely on robust participation by a large proportion of providers and hospitals in their communities. The value proposition for providers and hospitals to participate in a regional HIE varies, and there have been few requirements or regulatory levers to encourage providers to participate, although this is changing (see Current HIE Levers section of this document). Given the high cost of creating and maintaining interfaces, providers that choose to participate tend to share only what was required for Meaningful Use (e.g., care summary documents) or of highest value to them and most easily accessible through their EHR vendor. Further, ensuring the quality of data submitted to the HIE can be arduous: variations across EHRs and workflows, as well as frequent updates that change standard data feeds, can impact quality. **Regional HIEs continue to struggle with gaps in data and poor data quality, and those issues must be addressed by their participants.**

It seems clear that providers can take better care of their patients when they have access to more complete health information, but the return on investment for HIE has been difficult to quantify. Many providers believe that nationwide and vendor-driven query-based networks, which may be provided by their EHR vendors at no extra cost, can provide everything they need. HIE organizations are typically small, non-profit companies. As a result, **regional HIE in some areas continues to struggle with sustainability and to successfully market the higher-value services**, such as alerts and analytics, they are especially well-equipped to provide.

Other HIE Efforts

Hospital Event Notifications⁴

HIE can be used to alert health plans, Oregon's Medicaid coordinated care organizations (CCOs) and providers in the community about their patients' emergency department (ED) visits and hospital admissions. These notifications help providers have better awareness of the health problems, emergency needs, and poorly managed chronic conditions of their patients. It can also notify ED providers about their patients' previous ED care, their other providers in the community, the care guidelines created by their care team, and more.

Access to High Value Data⁵

HIE can help providers access high-value data like public health information. This includes public health registries, special public health systems like Prescription Drug Monitoring Program (PDMP) or Physician Orders for Life Sustaining Treatment (POLST) information.

Social Determinants of Health and Community Information Exchange

HIE can help to connect health care providers and social services providers to better support social determinants of health. In Oregon, there are a variety of emerging efforts to create or enhance these connections.

For information about *EDie/PreManage (aka Collective Platform)*, a hospital event notification effort in Oregon, and the *Prescription Drug Monitoring Program Integration initiative*, a high-value data access effort in Oregon, see *2019 Health IT Report to Oregon's Health IT Oversight Council*. See <http://www.orhealthleadershipcouncil.org/currently-in-development/> for more information about some of Oregon's key efforts around social determinants of health and HIE.

Current HIE Levers

In 2009, the **HITECH Act** brought more effective policy levers to expand the use of HIE. It provided direct funding for HIE through ONC's State HIE Cooperative Agreement Program and used incentives to encourage sharing of health information, in many cases providing federal funding at 90/10 (federal/state match) rates or even fully funding programs. **The HITECH Act will sunset in 2021.** In 2015, Congress passed the Medicaid Access and CHIP Reauthorization Act (MACRA), which consolidates several Medicare payment and quality programs.

The 21st Century Cures Act (**Cures Act**) builds on the HITECH Act to penalize organizations that fail to share information effectively.

HITECH Act: Meaningful Use

The HITECH Act led the Center for Medicare & Medicaid Services (CMS) to create the Medicare and Medicaid EHR Incentive Program⁶ and one of its core requirements, Meaningful Use. Among other things, Meaningful Use requires providers to send a care summary document to a patient's primary care provider upon hospital

⁴ Hospital Event Notifications supports HITOC Priority Use Case #4: Alerting.

⁵ Access to high-value data is not listed in HITOC's Priority Use Cases, but is separately called out as a HITOC priority.

⁶ Now Promoting Interoperability.

discharge or clinical encounter (“transitions of care”) to receive incentives. Most EHRs provided this capability through Direct secure messaging (see Other National HIE Efforts section above).

Although Meaningful Use did not provide a means to easily identify providers who should receive care summaries, and it is unclear how often providers viewed them, it did prompt providers to begin coordinating care with electronic health information sharing. Meaningful Use also required that EHRs create an electronic means for patients to view, download, and transmit their health information (patient portals and application programming interfaces (APIs)).

The EHR Incentive Programs and Meaningful Use have driven EHRs to be more interoperable but have done little to directly promote the use of community HIE or even nationwide or vendor-driven query-based networks. However, the increasing capability of EHRs to share information has allowed regional HIEs to concentrate more effectively upon higher-value services, such as the community health record, alerts, and population health analytics.

Federal EHR incentives are available to hospitals and physical health providers, with a few exceptions. To be eligible for Oregon’s Medicaid EHR Incentive Program, a clinician must be a physician, nurse practitioner, dentist, physician assistant practicing in a certain type of setting, naturopath, or a pediatric optometrist. See <http://medicaidehrincentives.oregon.gov> and the 2019 *Health IT Report to Oregon’s Health IT Oversight Council* to learn about EHREHR Incentive Program participation in Oregon. The Medicaid EHR Incentive Programs (MEHRIP) sunset in 2021; the last year a provider could begin the multi-year program was 2016.

MACRA: Medicare Quality Performance Program and Merit-based Incentive Payment System (MIPS)

The Medicare EHR Incentive Program transitioned in the 2017 program year to the Merit-based Incentive Program (MIPS), created by the MACRA legislation. MIPS incentivizes adoption and meaningful use of the latest certified EHR technology and has a broad reach across

Emerging Technical Standard: FHIR

The most prevalent technical standard today is HL7 v2 (version 2) messaging, developed by the HL7 (Health Level Seven), the dominant health IT standards development organization. It is heavily entrenched in EHR certification and federal incentive programs. It transports prescriptions, lab results, radiology reports, public health reports, and other clinical data. HL7 v2 messaging is efficient for sending information from one system to another, but poorly suited for requesting information from a system or over the Internet.

HL7 developed the Clinical Document Architecture (CDA) to exchange clinical data, including the CCD document. CDA documents will likely continue to be the dominant format for discharge summaries, encounter notes, consultations, referrals, reports, and clinical summaries.

However, sometimes a provider wants a specific piece of information, like a patient’s medication list when prescribing, or the most recent blood work as a baseline for a new lab result. CDA documents can provide that data, but it is buried in a lengthy document.

FHIR (Fast Healthcare Interoperability Resources) is a modern standard created by HL7 to request more granular information from a system. Using FHIR, a provider can request one piece of information, like a medication list or a specific lab result, and receive just that information.

FHIR is based on modern technologies used every day on the internet. It is also easier to develop and maintain FHIR-based APIs. Both ONC and CMS have recently proposed FHIR-based APIs as a requirement when sharing clinical data with consumers. EHR vendors and HIEs are beginning to explore the use of FHIR to exchange information between clinical systems, especially when using mobile technology.

Oregon's physical health providers who serve Medicare patients, including primary care and specialists. Many Medicaid providers serve Medicare patients and are eligible for MIPS.

HITECH Act: HIE Onboarding Funding

This funding can be used by state programs to support the costs of creating the initial connection (onboarding) between a provider and an interoperable system such as a regional HIE. These programs may provide funding to providers eligible for MEHRIP, as well as other Medicaid providers that are important participants in HIE, including behavioral health providers. Onboarding must connect the new Medicaid provider to an MEHRIP-eligible provider and help that provider meet Meaningful Use requirements. See <https://www.oregon.gov/oha/HPA/OHIT/Pages/HIE-onboarding.aspx> for information on Oregon's HIE Onboarding Program. Funds for these programs sunset in 2021.

Cures Act: Emerging Levers

The Cures Act requires ONC to establish or support a single nationwide network for the exchange of health information. These efforts are still in progress. Current work includes:

- Establishing new minimum requirements for the information that EHRs and other systems must be able to exchange to maintain certification. The US Core Data for Interoperability (USCDI) builds on Meaningful Use requirements, including the use of the CCD for clinical document exchange, to add clinical notes and data provenance to the information made available from EHRs. The USCDI helps standardize and increase the data available to regional HIEs. ONC has stated that the USCDI will be reviewed and updated regularly to continue to raise the bar for data that must be provided electronically by certified EHRs.
- Defined Information Blocking as, "a practice that... is likely to interfere with, prevent, or materially discourage access, exchange, or use of electronic health information." Previously, only software vendors were subject to rules against information blocking. Under proposed regulations, providers, HIE efforts, and networks can be penalized for information blocking. Preventing information blocking will make HIE efforts more effective and may spur participation in HIE.
- Creating a simple means for consumers to access their health information. Although many patients have access to their health information through provider portals, thanks to Meaningful Use requirements, that access has limitations. HIE efforts today seldom provide health information to consumers, largely because HIE organizations have no relationship with patients. The new requirements will make health information more accessible to consumers by setting standards for how EHRs must make information available to consumers and requiring health plans/CCOs to share more information with consumers. TEFCA opens the door to HIE efforts sharing information directly with consumers, but currently there are few levers to encourage such sharing.

Resources

Carequality: <https://carequality.org/>

CommonWell: <https://www.commonwellalliance.org/>

eHealth Exchange: <https://ehealthexchange.org/>

Direct Trust: <https://www.directtrust.org/>

Patient-Centered Data Home: <https://strategichie.com/initiatives/pcdh/>

FHIR: <https://www.hl7.org/fhir/summary.html>

USCDI: <https://www.healthit.gov/isa/us-core-data-interoperability-uscdi>

Stay Connected

You can find more information about Oregon's HIE efforts at our website, HealthIT.Oregon.gov.

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Get involved with Oregon Health IT

Office of Health Information Technology: HealthIT.Oregon.gov

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