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The Digital Health Most Wired Survey and Clinical Quality & Safety

In the tumultuous landscape of today's healthcare, the annual CHIME Digital Health Most Wired (DHMW) survey is a significant digital health "north star" that healthcare organizations (HCOs) have relied upon for years. Widely known for the annual Most Wired recognition awards, the DHMW survey provides healthcare leaders a comprehensive profile of digital health usage in U.S. HCOs and a reliable resource by which to benchmark their own digital health progression.

Reflecting the digital profiles of approximately 40% of U.S. hospitals, the array of HCOs included in the 2023 DHMW survey is representative of the known US Health System landscape. As such, the survey serves as a critical resource in identifying major themes and shifts in the HCO marketplace. The 2023 DHMW survey findings has identified an overarching theme that can be characterized as **"the acceleration of data usage."**

In a digital health world shaped by Meaningful Use, HCOs have largely moved on from focusing on their *data capture and storage capabilities to improving outcomes.* In this environment, leveraging data emerges as a critical activity in the realization of improved operational and clinical outcomes. It should come as little surprise then to see evidence of the "acceleration of data usage" in all eight sections of the survey, especially in the Clinical Quality and Safety section.

The Clinical Quality and Safety section represents the one section of the DHMW survey most closely aligned to the core business of healthcare providers: direct patient care. Fittingly, evidence of the acceleration of data usage is notable in the findings associated with this section.

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Defining Clinical Quality and Safety

Clinical quality in healthcare refers to the degree to which healthcare services provided to individuals and populations improve desired health outcomes. It encompasses a range of elements, including the effectiveness, efficiency, patient-centeredness, safety and timeliness of healthcare delivery. Safety, on the other hand, specifically focuses on the prevention of harm to patients during the provision of healthcare services.

Both clinical quality and safety are paramount in today's healthcare organizations as they directly impact patient well-being and overall healthcare system performance. In an era marked by technological advancements, complex care delivery models and an increasing emphasis on patient-centered care, HCOs are under heightened scrutiny to ensure that clinical quality and safety standards are met. This involves implementing evidence-based practices, continuous monitoring, and improvement initiatives to enhance patient outcomes, minimize errors and cultivate a culture of safety within healthcare institutions. The integration of clinical quality and safety principles is vital for achieving optimal healthcare delivery, enhancing patient satisfaction and ultimately improving the overall health of individuals and communities.

In the context of CHIME's 2023 Digital Health Most Wired (DHMW) survey, an HCO's Clinical Quality and Safety performance was adjudicated by assessing the following two factors:

1. Availability of Clinical Tools
2. Utilization of Clinical Tools

Representing approximately 15% of an HCO's total DHMW performance score, the Clinical Quality and Safety section of the survey, in many ways, reflects the "core" of an HCO's digital health profile.

"In the realm of healthcare, the seamless integration of clinical quality and safety technology is not merely a technological advancement; it is the compass guiding us toward excellence," noted Lorren Pettit, CHIME's Vice President of Digital Health Analytics (DHA), on the weighting assigned to this section of DHMW. "It serves as the critical lens through which we assess the heartbeat of a healthcare provider, illuminating their commitment to precision, patient well-being, and a culture of unwavering safety. In this digital age, where every data point tells a story, these technological innovations are the guardians of our collective health, enabling us to measure, refine and elevate the standards of care."

1 Availability of Clinical Tools

The first category considered in the Clinical Quality and Safety section of the DHMW survey addressed the availability of clinical tools, which facilitates accurate diagnostics, informed decision-making, and precise treatment plans. These tools enhance patient care outcomes and empower healthcare professionals with the means to efficiently navigate complex medical scenarios, ensuring a seamless and effective delivery of healthcare services.

In this section, nine questions were used to assess these factors:

Digitally Enabled Nurse Activities

Digitally enabled nurse activities are crucial for healthcare providers as they streamline communication, data management, and patient care coordination, allowing nurses to focus more on direct patient interaction. These technological tools have not only historically enhanced efficiency in routine tasks like medication administration documentation and taking/recording vital signs (leveraged by 99% of HCOs participating in the DHMW survey), but a growing number are utilizing digital tools to contribute to improved patient safety via patient discharge processes.

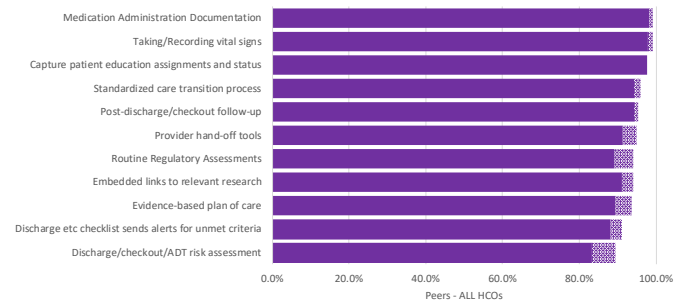## Wireless Handheld Devices at Point of Care

Wireless handheld devices at the point of care play a pivotal role by providing healthcare professionals with instant access to critical patient information, enabling (near) real-time decision-making, and improving overall efficiency. These devices facilitate seamless communication (e.g., secured messaging leveraged by 95% of participating HCOs) timely updates (alerts leveraged by 94% of HCOs) and even quick data retrieval (e.g., access to waveforms leveraged by 61% of HCOs) ensuring that healthcare providers can deliver more personalized and informed care directly at the patient's bedside.

Patient Monitoring Technology Loaded into the EHR

Patient monitoring technology integrated with the EHR is instrumental in providing real-time insights into a patient's health status, allowing healthcare providers to make informed decisions promptly. This synergy between patient monitoring and EHR not only ensures accurate and comprehensive record-keeping but also facilitates proactive and personalized care, ultimately leading to improved patient outcomes.

Question 68

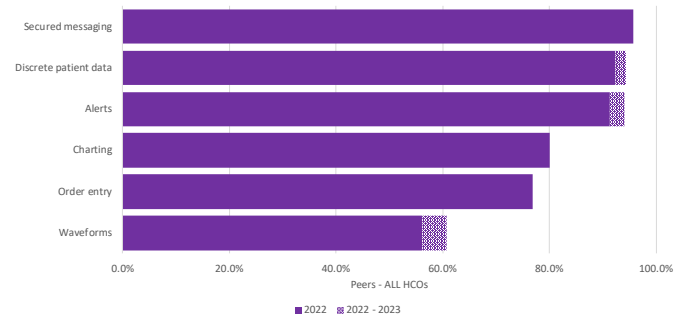### Which of the following nurse activities are electronically enabled in your organization?

Question 69

Which of the following capabilities are delivered via a wireless network to care team members using handheld devices at the point of care?

Question 71

Which care sites in your organization automatically load patient data directly into the EHR, from the monitoring technologies listed below?
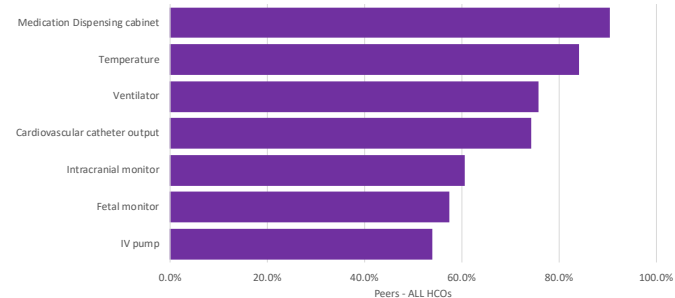
EHR-Integrated Surveillance System

The use of EHR-integrated surveillance systems enhances patient safety and enables early detection of potential health risks by continuously monitoring and analyzing patient data, thereby contributing to more proactive and effective healthcare management. Unique to this survey question is the request for participants to characterize the "adoption" of the surveillance system in their organization. Beyond *monitoring medication administration*, there was a notable gap in the degree to which the technologies were adopted.

How would you characterize the adoption of your EHR-integrated surveillance system in conducting the following?

Bar chart categories (top to bottom):
- Monitor medication administration
- Monitor change of condition through vital signs and lab results
- Send electronic alert notifying caregivers (e.g. deterioration in patient's condition; possible adverse event)
- Monitor to prevent falls
- Monitor to prevent pressure ulcers

X-axis: 0.0%, 20.0%, 40.0%, 60.0%, 80.0%, 100.0%
Peers - ALL HCOs

Legend: ■ Fully Adopted ▨ Partially Adopted

Healthcare-Associated Infection (HAIs) Bundles

The implementation of healthcare-associated infection (HAI) bundles in HCOs is pivotal; it involves a structured approach to infection prevention, incorporating evidence-based practices that collectively enhance patient safety and contribute to improve healthcare outcomes.

Which of the following healthcare-associated infection (HAIs) bundles do you leverage technology to electronically track within your EHR?

Bar chart categories (top to bottom):
- Bundles for the prevention of catheter-associated urinary tract infections (CAUTI)
- Bundles for the prevention of central line-associated bloodstream infections (CLABSI)
- Bundles for the prevention of surgical site infection
- Bundles for the prevention of ventilator-associated pneumonia (VAP)

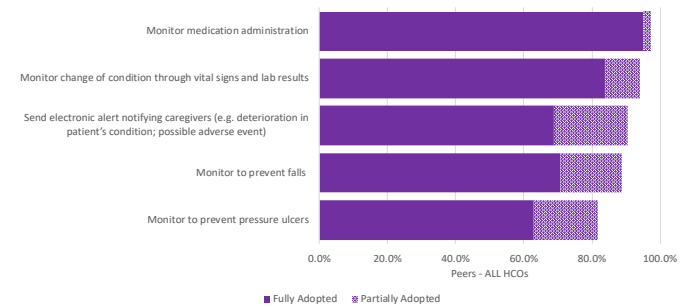X-axis: 0.0%, 20.0%, 40.0%, 60.0%, 80.0%, 100.0%
Peers - ALL HCOs

Enterprise Imaging System

Enterprise imaging systems in healthcare settings are comprehensive platforms that integrate and manage medical images and multimedia content, providing a unified solution for storing, accessing, and sharing diagnostic images and patient data across the healthcare enterprise. These systems are crucial for fostering interoperability, enhancing clinical collaboration, and improving diagnostic accuracy. They enable healthcare providers to seamlessly access and analyze a patient's complete imaging history, leading to more informed and efficient decision-making in patient care.
The findings from the 2023 DHMW survey suggest the Imaging market is fairly stable with the most notable increase in the availability of Vendor Neutral Archiving (+4% over 2022).
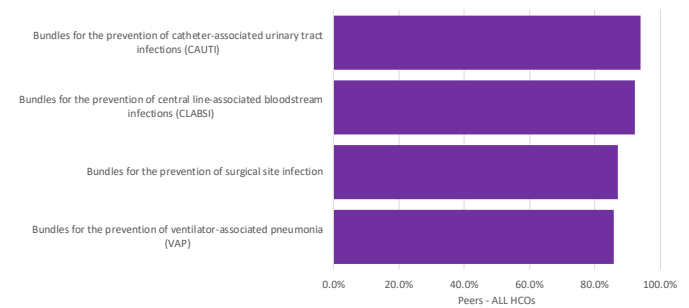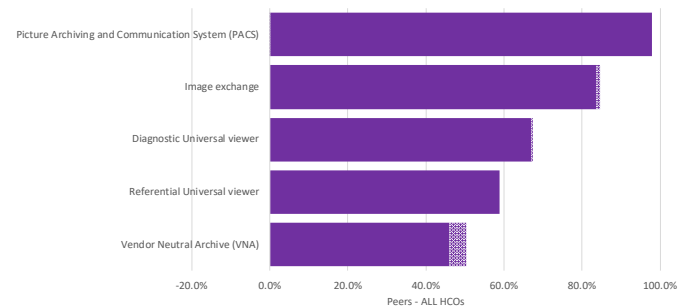
Which of the following solutions are part of your enterprise imaging system?

Bar chart categories (top to bottom):
- Picture Archiving and Communication System (PACS)
- Image exchange
- Diagnostic Universal viewer
- Referential Universal viewer
- Vendor Neutral Archive (VNA)

X-axis: -20.0%, 0.0%, 20.0%, 40.0%, 60.0%, 80.0%, 100.0%
Peers - ALL HCOs

Access to Specific Diagnostic Images

Provider access to varied diagnostic images is essential for comprehensive patient care, enabling accurate diagnoses, informed treatment decisions and a holistic understanding of a patient's medical history.

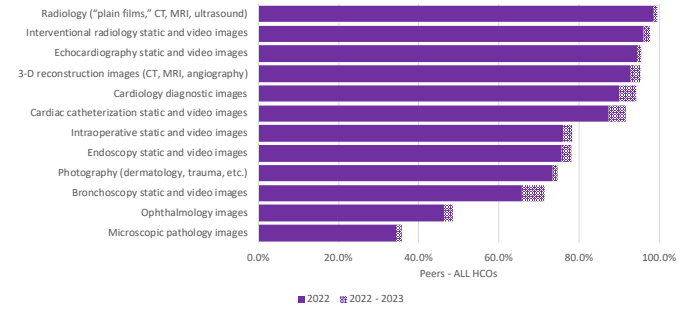## Remote Provider Access to Clinical Functions

Remote provider access to clinical functions is crucial for ensuring timely and efficient healthcare delivery, allowing physicians to review patient records, make informed decisions, and collaborate with colleagues from any location. This flexibility not only enhances the speed of medical interventions but also promotes seamless communication and coordination, ultimately improving patient outcomes and the overall efficiency of healthcare services.

e-Prescribing Functions

E-prescribing, or electronic prescribing, is a digital and automated method whereby healthcare professionals generate and transmit prescription orders for medications to pharmacies through secure electronic systems, improving accuracy, efficiency, and patient safety in the medication dispensing process.
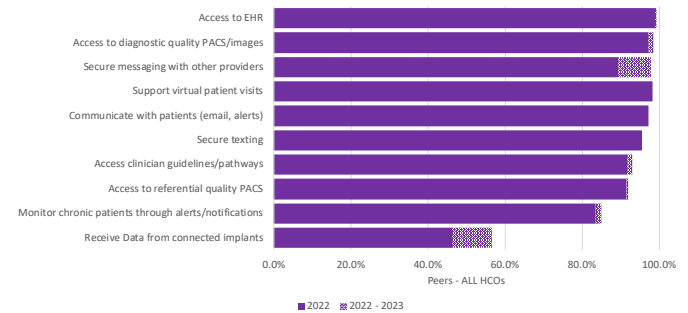
Question 76

Which of the following diagnostic images can be accessed via your enterprise imaging system?
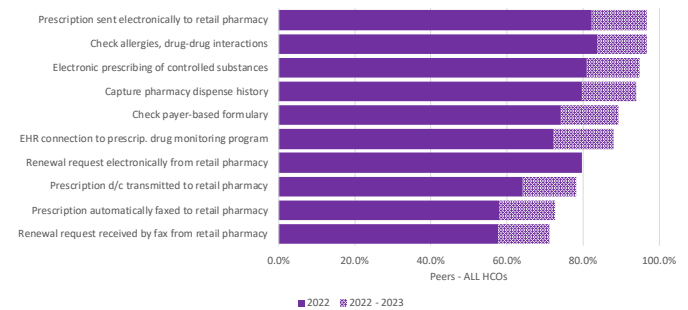
Radiology ("plain films," CT, MRI, ultrasound)
Interventional radiology static and video images
Echocardiography static and video images
3-D reconstruction images (CT, MRI, angiography)
Cardiology diagnostic images
Cardiac catheterization static and video images
Intraoperative static and video images
Endoscopy static and video images
Photography (dermatology, trauma, etc.)
Bronchoscopy static and video images
Ophthalmology images
Microscopic pathology images

0.0%   20.0%   40.0%   60.0%   80.0%   100.0%
Peers - ALL HCOs

■ 2022   ▨ 2022 - 2023

Question 78

Which of the following resource functions can providers associated with your organization access remotely?

Access to EHR
Access to diagnostic quality PACS/images
Secure messaging with other providers
Support virtual patient visits
Communicate with patients (email, alerts)
Secure texting
Access clinician guidelines/pathways
Access to referral quality PACS
Monitor chronic patients through alerts/notifications
Receive Data from connected implants

0.0%   20.0%   40.0%   60.0%   80.0%   100.0%
Peers - ALL HCOs

■ 2022   ▨ 2022 - 2023

Question 79

Which of the following e-prescribing functions do you provide for independent providers associated with your organization?

Prescription sent electronically to retail pharmacy
Check allergies, drug-drug interactions
Electronic prescribing of controlled substances
Capture pharmacy dispense history
Check payer-based formulary
EHR connection to prescrip. drug monitoring program
Renewal request electronically from retail pharmacy
Prescription d/c transmitted to retail pharmacy
Prescription automatically faxed to retail pharmacy
Renewal request received by fax from retail pharmacy

0.0%   20.0%   40.0%   60.0%   80.0%   100.0%
Peers - ALL HCOs

■ 2022   ▨ 2022 - 2023

A second category in the DHMW survey focused on the utilization of clinical tools. Assessing the usage of clinical technology in a healthcare organization is imperative for comprehending the organization's technical sophistication as it plays a pivotal role in enhancing patient care, streamlining processes, and ensuring overall operational efficiency. The integration of advanced clinical technologies, such as electronic health records (EHRs), diagnostic imaging systems, and telemedicine platforms, signifies a commitment to staying abreast of modern healthcare practices.

Evaluating the utilization of these technologies offers healthcare leaders a way to gauge the organization's capacity to leverage innovation for improved patient outcomes, cost-effectiveness, and data security. Moreover, understanding the level of technical sophistication helps healthcare administrators identify potential gaps, implement targeted training programs, and strategically invest in future technologies, thereby fostering a healthcare ecosystem that is both resilient and responsive to the evolving landscape of medical advancements.

In this section, participants were presented with five distinct facets designed to assess an HCO's utilization of clinical tools.

1. Real-time Quality Reporting

Real-time quality reporting refers to the immediate and continuous monitoring, analysis, and communication of performance metrics and patient care data. Benefits to a healthcare organization include prompt identification of areas for improvement, timely interventions to enhance patient outcomes, and the ability to make data-driven decisions, ultimately leading to improved overall quality of care and operational efficiency.

Question 79

What percent of your clinicians are using the following real-time quality reporting resources? If none, put 0%.


Peers - ALL HCOs
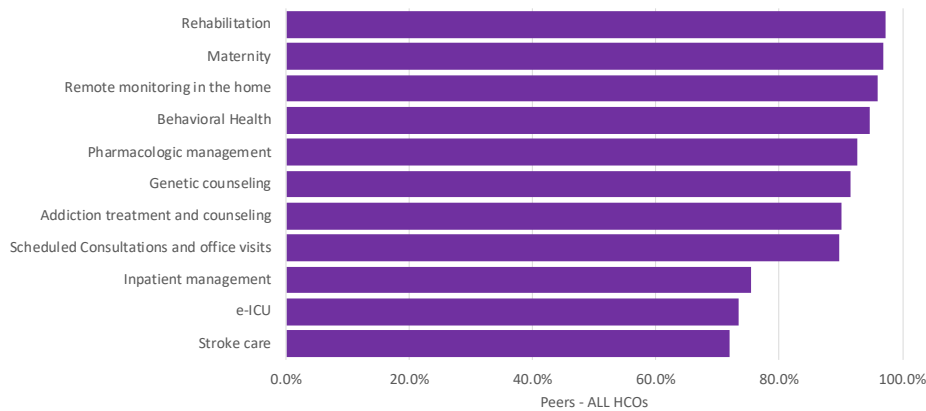
2. Electronic Discharge/Check-out Medication Orders

Utilizing information technology for discharge medication orders enhances patient care by ensuring accurate, timely, and electronically transmitted prescriptions, reducing the risk of medication errors and promoting a smoother transition from hospital to post-discharge care.

Question 74

Please estimate the percentage of discharge/check-out medication orders (for new or changed prescriptions) transmitted as an electronic prescription.


Peers - ALL HCOs
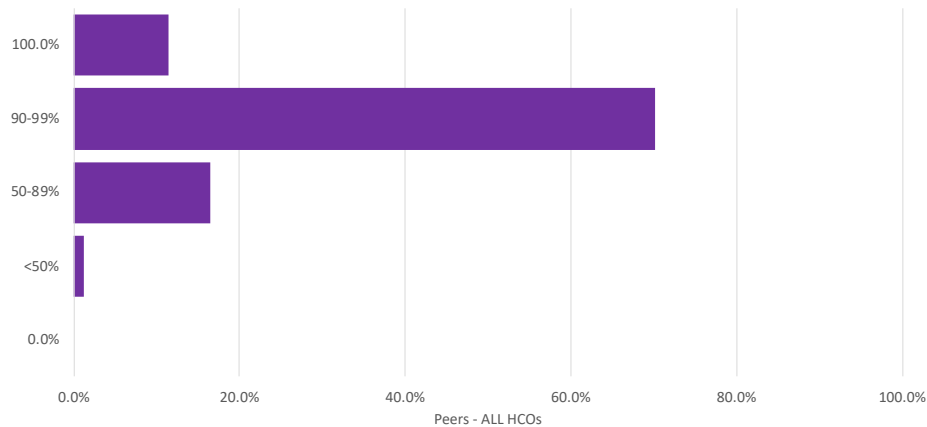
3. Decision Support Regarding Prescribing Anomalies

Decision support systems in healthcare settings utilize advanced algorithms and data analytics to scrutinize prescribing patterns, helping to identify anomalies such as inappropriate drug combinations, dosing errors, or potential adverse reactions. By cross-referencing patient data and clinical guidelines, these systems empower healthcare professionals to make informed decisions, mitigate risks, and optimize prescription practices, ultimately improving patient safety and the quality of care provided.

Question 77

How would you characterize the adoption of your decision support system to identify the following possible prescribing anomalies?

Peers - ALL HCOs

■ Fully Adopted   ▩ Partially Adopted
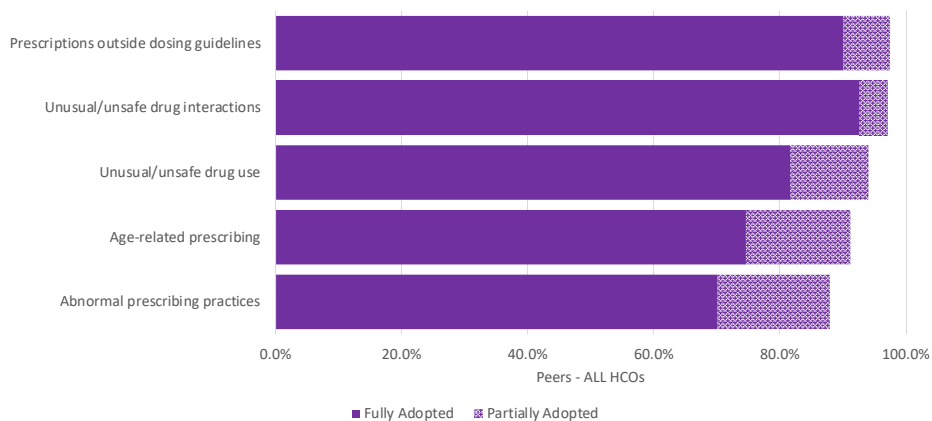
4. Prescribing Schedule 2 to 4 Controlled Substances

Leaders of healthcare organizations should monitor the prescribing of Schedule 2 to 4 controlled substances to address potential issues of overprescribing, abuse, or diversion, ensuring patient safety and compliance with regulatory requirements. This proactive oversight helps to prevent substance misuse within the healthcare system while also supporting the development of effective policies and interventions to curb the opioid epidemic and other controlled substance-related challenges.

Question 80

What percentage of controlled substances (schedule 2-4) are electronically prescribed to patients in the following areas of your organization?


Peers - ALL HCOs
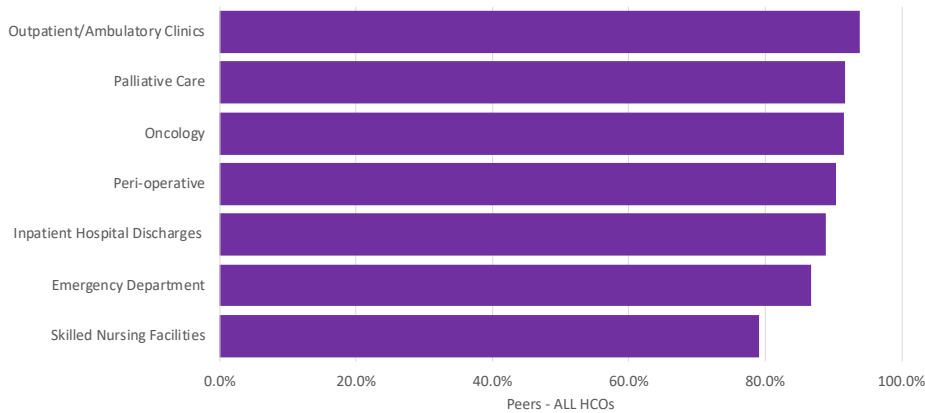
5. Opioid Reduction Mechanisms

Opioid reduction mechanisms refer to strategies and interventions implemented by healthcare providers to minimize the prescribing and usage of opioid medications. These mechanisms aim to address the opioid epidemic, decrease the risk of addiction and overdose, and promote alternative pain management approaches. They are crucial for healthcare providers and patients alike as they enhance patient safety, mitigate the potential for opioid-related harm, and contribute to a more comprehensive and responsible approach to pain management within the healthcare system.

Question 81

How would you characterize the adoption of technology designed to support the following opioid use reduction mechanisms in your organization?

Peers - ALL HCOs

■ Fully Adopted   ▨ Partially Adopted
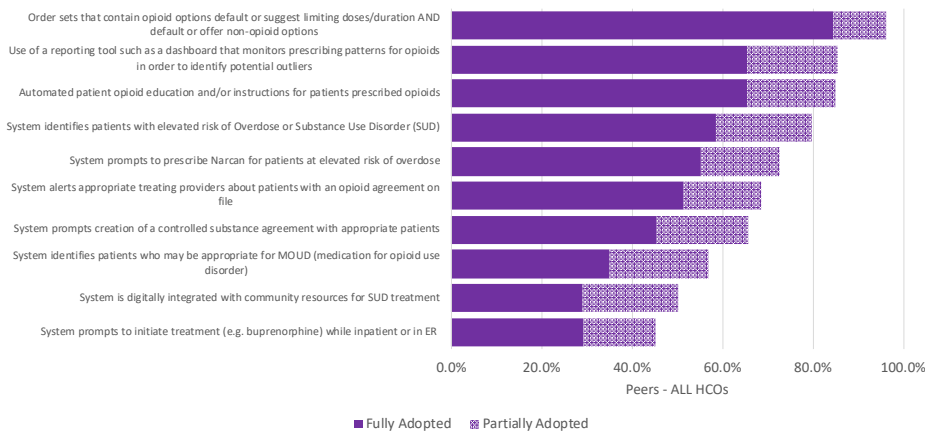
3 A Critical Platform for Transformation

Overall, the DHMW Clinical Quality and Safety section reveals a positive trend in the availability of most tools, with areas like digital nurse activities, wireless handheld devices, and EHR-integrated patient monitoring showing high adoption rates.

However, there are still gaps in utilization of some tools, particularly advanced features like real-time quality reporting, decision support regarding prescribing anomalies, and opioid reduction mechanisms.

EHRs remain a critical platform for leveraging clinical digital health tools to streamline patient information management, enhance communication among healthcare professionals, and contribute to improved patient care outcomes.

Partnerships with reliable EHR vendors are crucial for successful implementation and optimization. These collaborations provide access to cutting-edge technologies, updates, and specialized expertise. Further, such partnerships enable organizations to stay at the forefront of digital health innovation and ensure the effective integration of new tools and features that can optimize workflows, enhance diagnostic capabilities, and ultimately elevate the overall quality and efficiency of healthcare delivery. Additionally, EHR vendors can offer valuable support in navigating regulatory compliance, data security, and interoperability challenges, allowing healthcare organizations to focus on providing excellent patient care.

To move the needle on improving clinical quality and safety through technology, HCOs must:

- **Focus on increasing utilization** of available clinical digital tools, especially those with data-driven capabilities that improve patient outcomes and safety.
- **Invest in training and education** for healthcare professionals to ensure effective use of advanced features and functionalities.
- **Develop robust data governance and analytics strategies** to ensure secure and efficient use of patient data for quality improvement initiatives.
- **Prioritize the implementation of advanced technologies** like surveillance systems and opioid reduction mechanisms.
- **Collaborate with EHR vendors** to leverage their expertise and resources for successful technology integration and optimization.
- **Advocate for policies and regulations** that support the adoption and utilization of effective clinical quality and safety technologies.

By actively implementing and utilizing these tools, HCOs can enhance patient outcomes, optimize workflows, and contribute to a more efficient and effective healthcare system.

About CHIME

The College of Healthcare Information Management Executives (CHIME) is an executive organization dedicated to serving chief information officers (CIOs), chief medical information officers (CMIOs), chief nursing information officers (CNIOs), chief innovation officers (CIOs), chief digital officers (CDOs), and other senior healthcare IT leaders. With more than 5,000 members in 58 countries plus 2 US territories and over 190 healthcare IT business partners and professional services firms, CHIME and its three associations provide a highly interactive, trusted environment enabling senior professional and industry leaders to collaborate, exchange best practices, address professional development needs, and advocate the effective use of information management to improve the health and care in the communities they serve. For more information, please visit **chimecentral.org**.

About Digital Health Analytics

Digital Health Analytics (DHA) is a global market intelligence and survey research hub for digital health technology. Provided by the College of Healthcare Information Management Executives (CHIME), DHA was created in 2022 to supercharge organizations' digital health transformation capabilities by moving from a one-snapshot-in-time, static Most Wired survey to a 365/24/7 data and analytics resource. DHA is the gateway for provider organizations and companies to better understand how digital technology supports leaders in transforming health and care and delivering data insights that help them make the greatest business impact possible. For more information, please visit **dhanalytics.org**.

About ORACLE Health

At Oracle Health, everything we do is dedicated to helping people live healthier lives and improving healthcare. By connecting clinical, operational, and financial data across the ecosystem, we can help providers improve patient outcomes, access data-driven, actionable insights, reduce costs, and unleash innovation. Integrated technologies, data, and analytics empower patients in their health journey, inform clinician decision-making, and accelerate research to advance health and well-being for people worldwide.