

# Implementation Status of Electronic Health Record (EHR) Systems in State Psychiatric Hospitals

Lucille Schacht, PhD; Glorimar Ortiz, MS; Robert Shaw, MA

## Executive Summary

In today's environment, Electronic Health Record (EHR) systems are an important and expensive purchase, and in many cases a necessary enhancement for the future viability of the healthcare system. A good system will make hospital operations more efficient and provide better outcomes for consumers. Implementing a system requires a great deal of staff involvement, training, IT upgrades, and internal and contracted expertise. It also requires a strong vision of the future where the EHR serves more than just as a patient record but as an integral component of a decision support system. It is a long-term relationship not just with the system but also with the vendor. Because of their complexity, it is very likely that even a smooth implementation of a new EHR may seem burdensome and problematic.

This consumer report is based on the experiences of all states and the District of Columbia in relation to implementation of EHRs in their state-operated psychiatric hospitals. A survey was distributed to all states in 2018 to determine current status. The last known report is nearly five years old and much has changed that would have influenced the uptake of EHRs. All states and the District of Columbia responded to the survey providing the full scope of EHR use in state-operated psychiatric hospitals.

Forty-one states have an EHR in their state-operated psychiatric hospitals, although no state has an EHR that was all-inclusive in terms of components.

- Some states have limited the number of hospitals within the state to implement the EHR.

- A variety of products have been implemented, some homegrown, and many in only one or two states.
- Netsmart's Avatar product is the most common (49% of states with an EHR and 42% of state psychiatric hospitals with an EHR). Functionality varies across states, including those using the same product. The majority of systems were able to keep progress notes, were compliant with the Centers for Medicare & Medicaid Services (CMS) regulations and The Joint Commission requirements, and recorded treatment planning information.
- 76% of states reported that they still needed to keep paper charts alongside the EHR.
- The majority of states also indicated that their EHR system was not providing adequate support for transmitting data to other systems and migration of patient data from legacy systems.

Most states reported that they were satisfied with the overall technical capabilities of their EHR. Several areas of dissatisfaction were observed: need for customization, amount of navigation and scrolling, and user interface with other systems and networks.

Meaningful use criteria is met by some of the EHR systems. Two-thirds of states that are not using certified EHR technology are not currently planning to upgrade or change. These states may be waiting for the meaningful use criteria for psychiatric hospitals to be more clearly defined, as most meaningful use criteria apply to other settings.

The wave of the future appears to bring more change. More than half of the states with EHRs were planning to upgrade or change their systems due to current inadequacies. While in total, more than half of the states would not recommend their system to other states, only one-third of states with the Netsmart EHR would not recommend it.

The EHR is foremost a tool to record clinical care, to allow the clinical team to dialogue about the patient's concerns, clinical approaches, and outcomes of treatment. It is ultimately the patient's record of their care. The issues for the future include standardizing workflow and documentation across the hospital system in order to implement a consistent and less customized EHR, managing the large capital and continuing maintenance costs of EHR technology, and ensuring the EHR is capable of meeting future requirements from both internal and external oversight.

## Background

According to CMS, an EHR replaces paper medical records with an electronic version. It has the potential to streamline the workflow of clinicians and provide easy and automatic access to data that can support care-related activities and can influence evidence-based decision making, quality management, and the reporting of outcomes<sup>1</sup>. But the implementation of the EHR in the mental health field has been slow. A recent study showed that the uptake of the EHR is significantly slower in psychiatry<sup>2</sup>. By January 1, 2014 it was expected that all public and private healthcare providers and other eligible professionals have adopted and demonstrated meaningful use of electronic medical records to maintain their existing Medicaid and Medicare reimbursement levels according to the America Recovery and Reinvestment Act<sup>3</sup>. Although this rule excluded psychiatric inpatient settings, in that same year CMS began requesting psychiatric inpatient facilities participating in the Inpatient Psychiatry Facility Quality Reporting (IPFQR) program, to provide an attestation about their use of EHR<sup>4</sup>.

Current public CMS data, submitted by IPFQR participating hospitals, showed that only 6% of state psychiatric hospitals indicated that the highest typical use of an EHR during transitions in care included certified EHR technology, and only 8% have the capability to transfer interoperable health information through a Health Information Service Provider (HISP) at times of transitions in care<sup>5</sup>. While these attestation data provide an overview of the EHR status in state psychiatric hospitals, the information collected is very limited. By December 31, 2018 hospitals were no longer required to report these EHR related measures.

In an effort to increase the understanding of the current level of penetration of EHRs in state psychiatric hospitals, NRI collaborated with NASMHPD in the development and implementation of an EHR status survey. The main goal was to collect state data about the EHR implementation, functionality and usability. For hospitals that have not adopted an EHR system, the barriers towards implementation were gathered.

## Method

The EHR Status survey was originally developed by members of the NASMHPD Medical Directors Council. Some state Medical Directors in planning to implement or update a state hospital EHR system were curious about the experiences of other

states. They were also concerned about the EHRs used in health care systems that were not suitable for behavioral health settings. The Council decided that a survey would be the best way to obtain a comprehensive understanding of the current EHR landscape in state psychiatric hospitals. The survey developed by the Medical Directors Council was based on prior EHR surveys conducted by NRI and others. In addition to the need for systems that are technically proficient in all major EHR functions, the Council's interest focused on systems that were most satisfactory to clinician end users while providing the most added value in the provision of patient care. NRI provided recommendations and programmed the online version of the survey. After the pilot testing phase, the Executive Director from NASMHPD distributed the survey link to all 51 State Mental Health Commissioners (SMHCs) (including the District of Columbia), with a copy to the Medical Directors. Follow-up to non-responders was performed by staff from NRI. Representatives from nine outstanding non-responder states were identified using a secondary database. Data collection spanned from July 16<sup>th</sup> until October 12<sup>th</sup>, 2018 when all states had submitted responses. Multiple responses were received from three states; those states were contacted to determine the most appropriate response to use.

For purposes of this survey, an EHR was simply defined as a digital version of a patient's paper chart. There were no minimum components specified, therefore an EHR could be in the form of a full or partial version of the paper chart or include all or some components of the paper chart.

The survey included 23 questions about the current EHR status, the components, functionality and usability of the EHR, plans to purchase or develop an EHR, and the barriers related to the non-adoption of the EHR system. A comprehensive list that included 13 components of the EHR system, determined its functionality. Respondents also identified the name of the EHR system and the EHR vendor, and provided feedback about the likelihood for future recommendation.

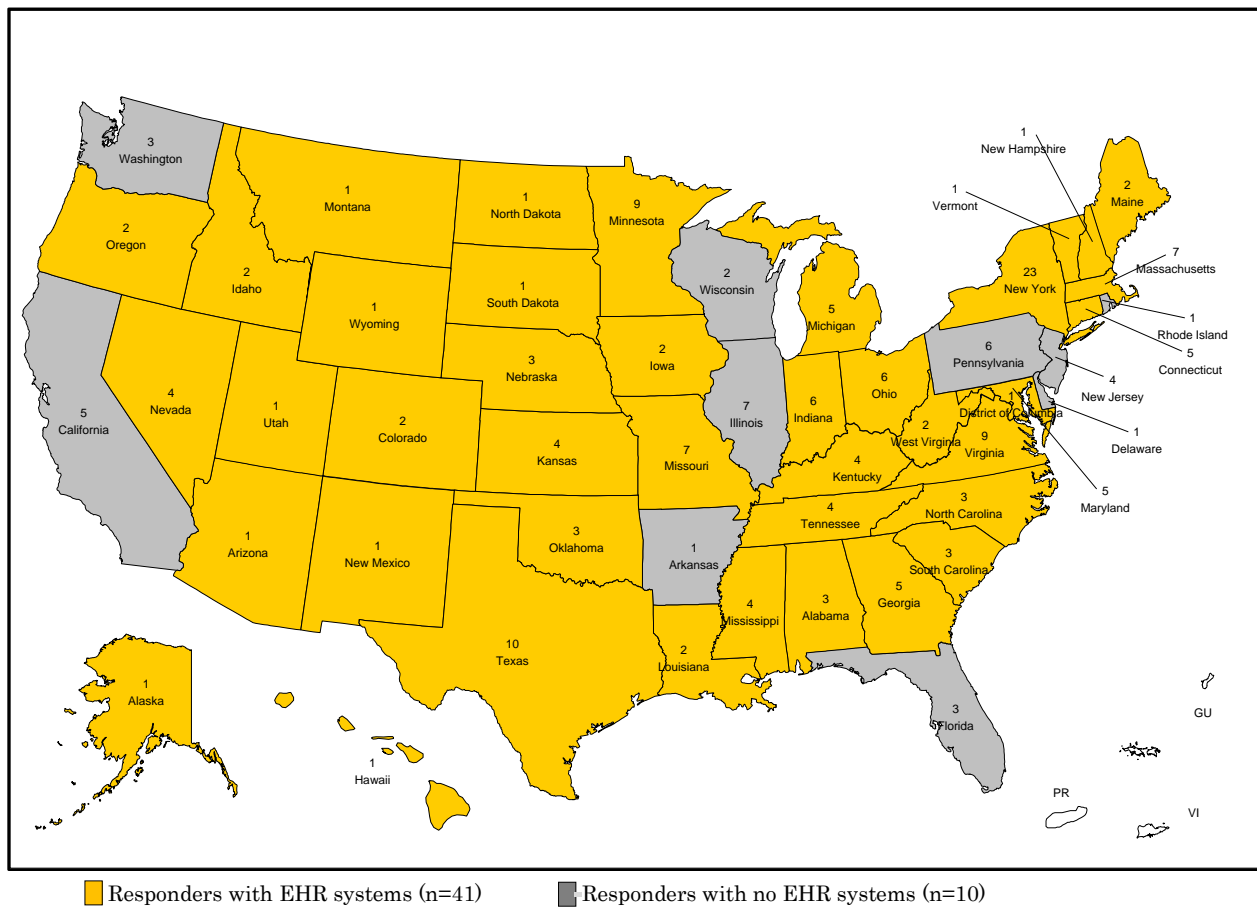
The questions were built using various formats that included multiple choice, open-ended questions, and a 4-point Likert scale. The Likert scale ranged from “strongly disagree” to “strongly agree”, with an “I don’t know” option. At the time of analysis, the one question using the 4-point Likert scale was collapsed into a binary (agree versus disagree) scale. Ratings for the “strongly disagree” and “disagree” were combined to represent the disagree group, and ratings for “strongly agree” and “agree” were combined to represent the agree group.

## Results

### *EHRs in State Psychiatric Hospitals*

Representatives from 51 states, including the District of Columbia responded to the survey, representing 191 state psychiatric hospitals. Figure 1 portrays the number of state psychiatric hospitals by state and whether or not EHRs are implemented in any of their hospitals. Forty-one states (80%), including the District of Columbia, have implemented an EHR system in the state psychiatric hospitals, although 8 states have not implemented in all hospitals. Ten states (20%) have not implemented an EHR in any of their psychiatric hospitals.

**Figure 1. Number of state psychiatric hospitals in each state**



Note: Alabama, Kentucky, Maryland, North Carolina, Ohio, South Carolina, Tennessee, and Virginia have not implemented the EHR in all of their state psychiatric hospitals.

Nationwide, EHRs have been implemented in 70% of state psychiatric hospitals. The states that have implemented EHRs in any of their state psychiatric hospitals reported 158 hospitals in total with 138 having an EHR, or 87% of hospitals in states with an EHR. Of the ten states without EHRs, five have plans to either purchase or develop one within six months of the survey.

### *Barriers to Implementing EHRs*

States that had not adopted EHRs provided the barriers to implementation. There were several common themes across states as to barriers. Eight of these ten states mentioned funding/costs, four also mentioned adequacy to meet their needs, and three mentioned IT issues.

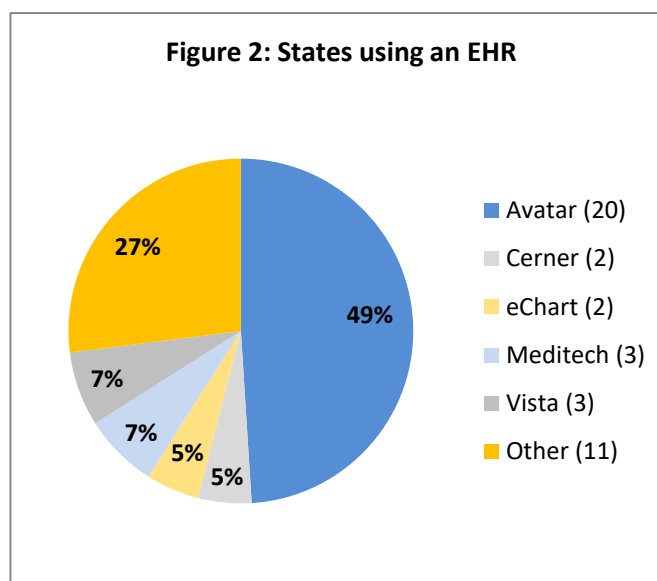
### *Popularity of Different EHR Systems*

More than a dozen EHR systems were used by states, some homegrown and some hybrids of various systems. As Figure 2 shows, nearly half the states have implemented some version of Netsmart's Avatar system (20 states, 58 hospitals).

Homegrown systems are those developed by the state or facility, including the eChart system developed by Utah, and the Vista system developed by the Veterans Administration (which has been discontinued) (9 states, 43 hospitals).

Other commercial products include Cerner, Fei, Harris, Meditech, Meta, Reliable, Thrive, and Tier (12 states, 37 hospitals).

States were given an opportunity to provide the pros and cons for their EHR system. Table 1 provides a summary of statements based on the EHR system.



**Table 1. Additional information about the current EHR system**

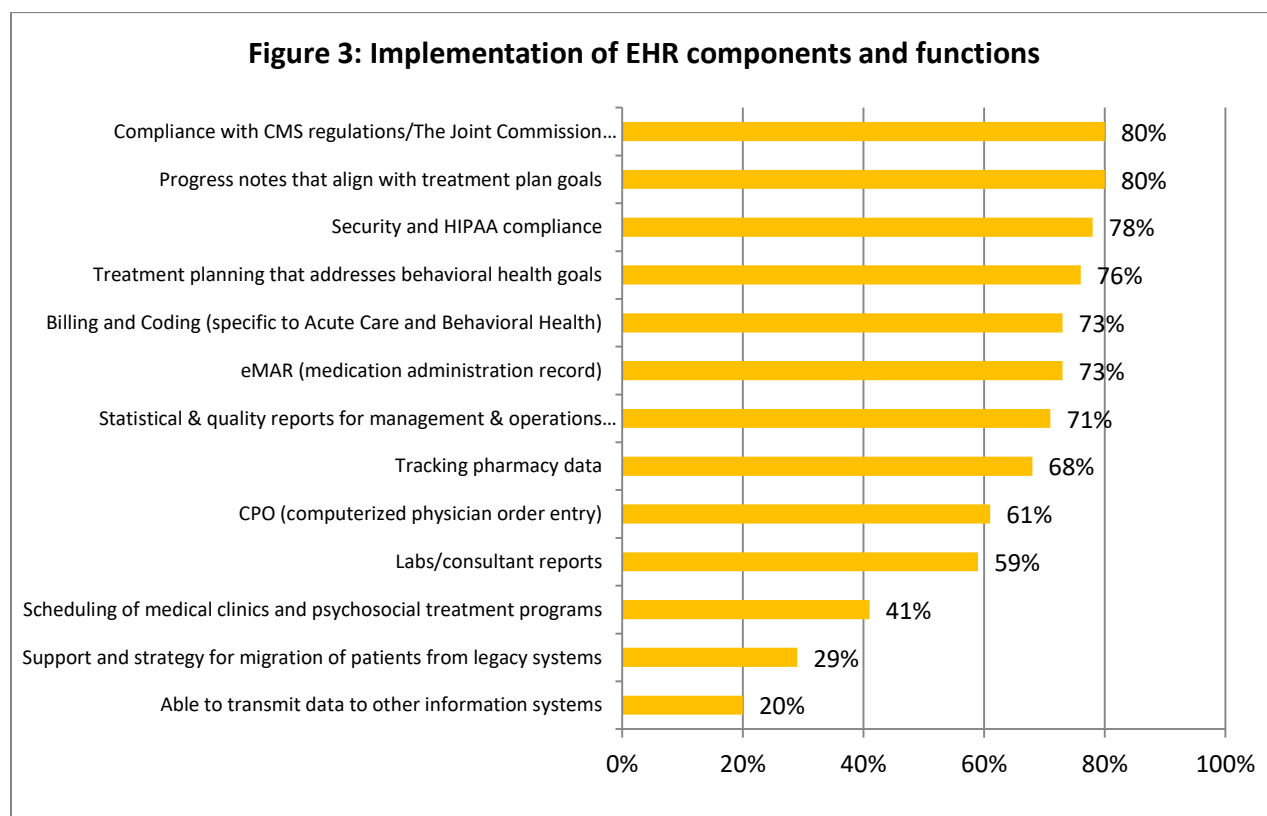
	Pros	Cons
Netsmart	<ul style="list-style-type: none"> <li>• It is designed for behavioral health</li> <li>• It is well-suited for inpatient psychiatric setting, for both acute and sub-acute patients</li> <li>• Allows customization</li> <li>• Provides diverse solutions from cheap and basic to expensive and more comprehensive</li> </ul>	<ul style="list-style-type: none"> <li>• Over-customization could limit the use of the data</li> <li>• The support received has not been timely causing several problems</li> <li>• High costs associated with customization, implementation, and maintenance</li> <li>• May involve several clinical staff to assure satisfaction</li> </ul>
Homegrown (State developed)	<ul style="list-style-type: none"> <li>• Meets the state psychiatric hospitals needs</li> </ul>	<ul style="list-style-type: none"> <li>• High customization limits the ability of implementation at another hospital setting</li> <li>• Low support</li> <li>• Tend to not be web enabled</li> <li>• Tend to not meet meaningful use criteria</li> </ul>
Meditech	<ul style="list-style-type: none"> <li>• Very good at customization</li> <li>• Provides full integration of all aspects of the medical record</li> </ul>	<ul style="list-style-type: none"> <li>• Continued development and purchasing of additional interfaces is very expensive</li> <li>• Roll-out could be extremely slow</li> </ul>
Meta HealthCare IT Solutions	<ul style="list-style-type: none"> <li>• Cheaper, compare to others</li> </ul>	
Harris	<ul style="list-style-type: none"> <li>• Involves newer technology</li> </ul>	<ul style="list-style-type: none"> <li>• Very few resources are proficient in the newer technology</li> <li>• Inadequate customer support</li> <li>• Requires much follow up to make any changes</li> </ul>
FEi	<ul style="list-style-type: none"> <li>• Could be a helpful tool</li> </ul>	<ul style="list-style-type: none"> <li>• Does not meet meaningful use criteria</li> <li>• Does not fully function with all aspects of the medical record</li> </ul>
Reliable Health Systems	<ul style="list-style-type: none"> <li>• Designed for long-term care settings</li> </ul>	<ul style="list-style-type: none"> <li>• Not appropriate for a state hospital setting</li> <li>• Requires much customization</li> <li>• Very small company with limited resources</li> </ul>

### *Components and Functions of EHRs*

States were asked which of 13 components and functions had been implemented in their EHRs. As shown in Figure 3, only two components are consistently evident in 80% of states. Progress notes that align with treatment plan goals (80%), Compliance with CMS regulations/The Joint Commission requirements (80%) were

the most consistently implemented components or functions. Support and strategy for migration of patient data from legacy systems (29%) and transmitting data to other information systems (outside healthcare systems, health information exchange) (20%) were the least implemented components or functions.

Using the 13 components identified in the survey, the average number of components and functions implemented by states was nine. Twenty-four states implemented nine or more components and functions. Only two states implemented all 13 components. One state had implemented only one component or function, Compliance with CMS regulations/The Joint Commission requirements. Three of the four states with the fewest number of components and functions implemented, reported utilizing the component of Statistical and quality reports for management and operations decision-making.



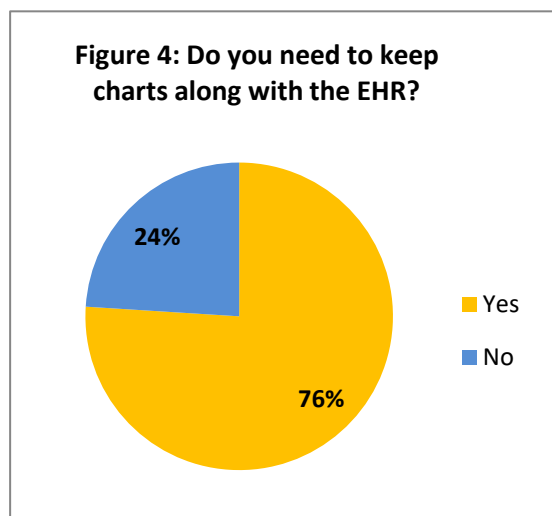
### *Keeping Charts Along with the EHR*

As Figure 4 shows, most states with an EHR (31 of 41) indicated that they needed to keep paper charts along with their EHR. Most reasons for keeping paper charts



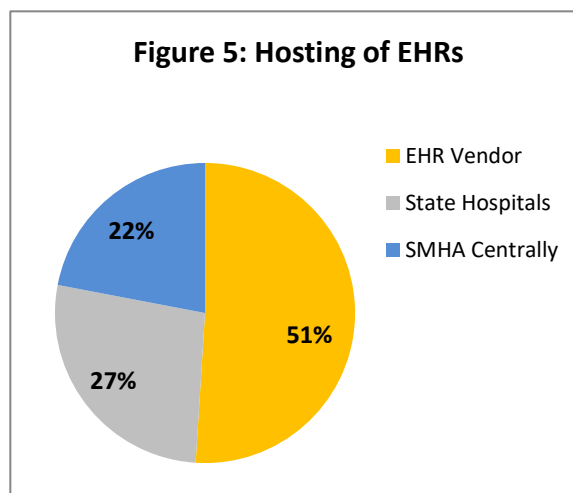
focused on elements that were not part of the electronic record. The most frequently cited specific items that were kept on paper charts were treatment plans (6 states), orders (4 states), and court documents (4 states).

There were 10 states which reported that they do not need to keep paper charts. There was no common EHR feature across these 10 states that was absent from those states that indicated they also kept paper records. Maintaining paper records may be a local decision independent of the EHR components implemented.



### *Hosting EHRs*

As Figure 5 shows, just over half (21) of the 41 states with EHRs had their EHRs hosted by the vendor of their system, with the remaining almost evenly split between the state psychiatric hospitals and either the state mental health agency (SMHA) or the state department of health. This variation was evident across Netsmart, Homegrown systems, and Other commercial products.



### *Meaningful Use Certification*

The Center for Medicare & Medicaid Services (CMS) established an incentive program in 2011 to encourage the use of certified EHR technology. Requirements were established for the electronic capture of clinical data, encouraged the use of EHRs for continuous quality improvement of care and the exchange of information in as structured a format as possible.<sup>6</sup>

”Meaningful Use is defined by the use of certified EHR technology in a meaningful manner (for example electronic prescribing); ensuring that the

certified EHR technology is connected in a manner that provides for the electronic exchange of health information to improve the quality of care; and that in using certified EHR technology the provider must submit to the Secretary of Health & Human Services (HHS) information on quality of care and other measures”<sup>7</sup>

Most (63%) of the states use an EHR that is certified to meet meaningful use criteria. Of the 15 states that had EHRs that were not certified to meet meaningful use criteria, only five were planning to upgrade their EHRs to meet the criteria.

### *Upgrading or Changing EHRs*

As Table 2 shows, more than half of the states with EHRs are planning to make changes to their EHRs. States offered, in free-text format, reasons for the upgrade or change, many citing more than one reason. The most common theme was that the current system is inadequate to meet their needs, either clinically or operationally. However, six states indicated that they were planning to upgrade their current EHR, and three states indicated they were planning to change their EHR because their current system is outdated. The common theme is adding functionality or components. Not all states explicitly stated whether they were planning to upgrade their current system versus change their EHR vendor, therefore the counts may under-represent the ability of the existing systems to meet the identified shortcomings.

**Table 2. State planning to upgrade or change the EHR**

Yes	24 (59%)	Reasons* for Upgrading or Changing EHR	
		Current EHR is inadequate	21
		Upgrade the same EHR	6
		Current EHR is outdated	3
No	17		

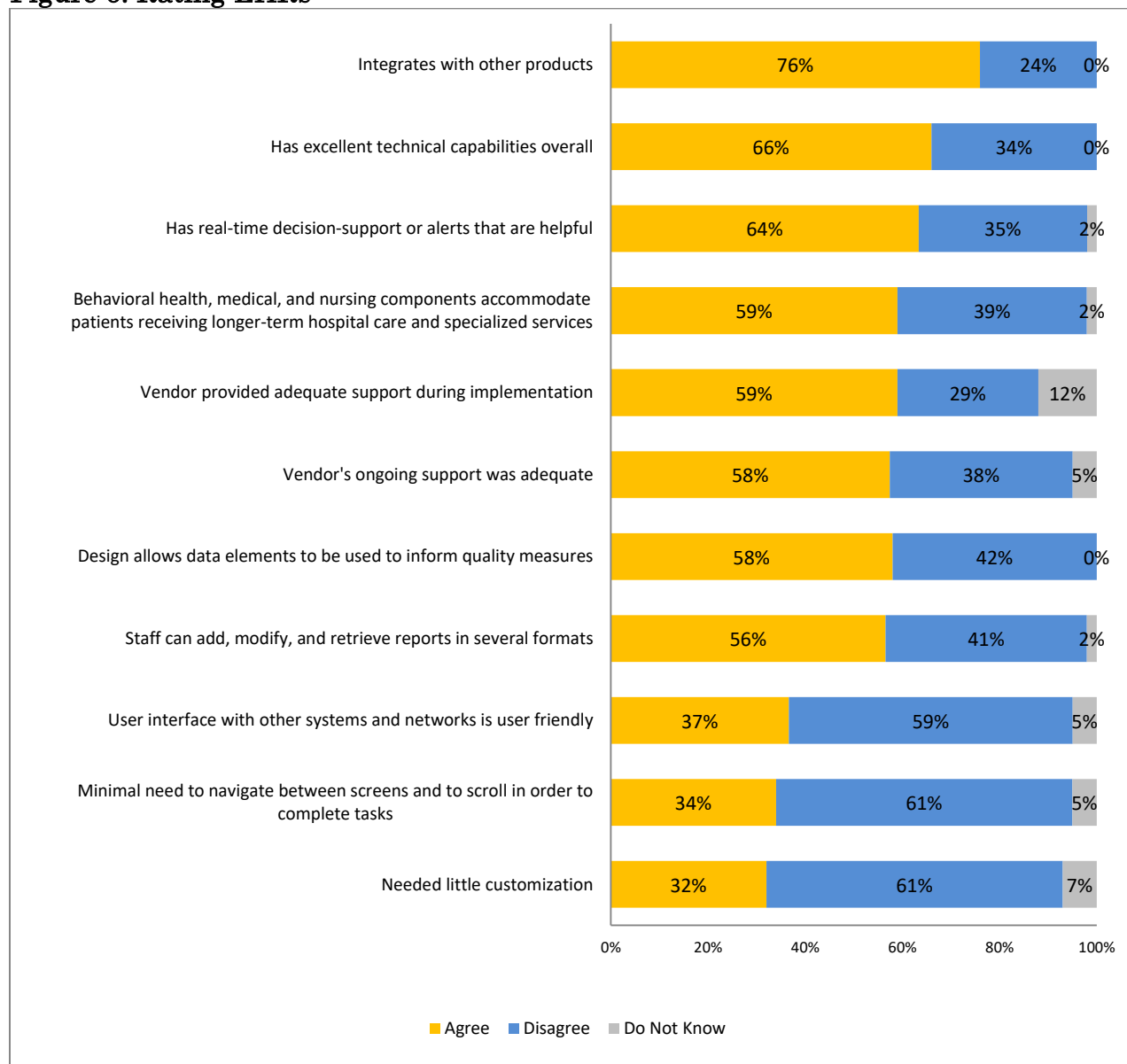
\*Most common themes, count are not unique

A greater proportion of states with Homegrown systems indicated that they were planning to upgrade or change their systems (7 of 9 states or 78%). More than half of states with other commercial system (7 of 12 states or 58%) and half of the states with Netsmart were planning to upgrade or change (10 of 20 states or 50%) their EHR.

### Rating EHRs

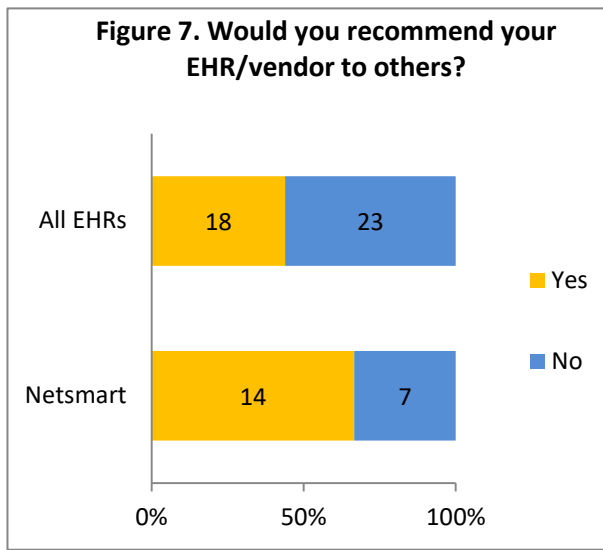
States with EHRs were asked to rate (on a scale from strongly disagree to strongly agree) how well their system worked on 11 specific attributes. As Figure 6 shows, more states were satisfied with their EHR’s integration with other products, technical capabilities, and decision support and alert capabilities. More states were not satisfied with the need for customization, the navigation and scrolling necessary to complete tasks, and user interface with other systems and networks.

**Figure 6. Rating EHRs**



## Recommending EHRs

As Figure 7 shows, more than half of the states indicated they would not recommend their EHR to other states. However, only one-third of states using Netsmart's Avatar products would not recommend it to other states. None of the states using a homegrown system would recommend their system. Common themes for not recommending the EHR include level of vendor support received and modification requirements. However, there were also unique and varied experiences across states.



## Findings & Recommendations

### Findings

Most states have implemented some level of an EHR in their state psychiatric hospitals although 20% of those states have not implemented it in all their hospitals. Netsmart's Avatar is the most common EHR system having been adopted in half the states that have implemented an EHR. There are several EHR systems in use in only one or two states, which provides only a singular impression of the utility of the EHR system for inpatient psychiatric hospitals.

Among the ten states that have not implemented an EHR in any of their psychiatric hospitals, there were some common themes. The most common reason provided was funding or cost. However, no state provided only one reason. Four states specifically mentioned concern over finding a system that would be adequate for their system (patient or services). Three states also specifically mentioned the issue of needing to standardize (documentation and processes) across their current system before adopting an EHR.

More than half of the states with EHRs were planning on either replacing or upgrading their system, however, only half of the states using Netsmart's Avatar were planning on a replacement or upgrade. The most common reason for

replacement or upgrade was inadequacy of the current system. As indicated by functions available, many states' EHRs do not have all functions, particularly the following:

- transmitting data to other information systems (outside healthcare systems, health information exchange),
- pharmacy tracking,
- computerized physician order entry, and
- scheduling medical clinics and psychosocial treatment.

Given the lack of comprehensive functionality, the need to keep paper charts is not obviated by the implementation of an EHR. More than three-quarters of states that have an EHR reported that they still kept paper charts. Despite the need to keep charts, most of the EHRs could record progress notes. Many of the reasons for keeping paper charts appear to center around documents requiring signatures, legal documents, consults or other healthcare documents generated from other systems, physician orders, and medication administration. These areas may represent significant add-on components of the EHR and additional expense for the state.

Most of the states had EHRs that were certified to meet meaningful use criteria and one-third of the states that had EHRs that did not meet these criteria were planning on adding this. States provided satisfaction rating of their EHR/vendor on specific attributes. First, it should be noted that none of the attributes rated well for at least 80% of states, and 10 of the 11 attributes did not rate positively for at least two-thirds of the states. On average, states rated 6 of the 11 attributes positively. There were 14 states that rated at least 8 of the 11 attributes positively; however, there were 16 states that rated only 1-4 attributes positively. These findings suggest that experiences across states were more negative than positive and varied widely.

- The highest rated attributes included: integration with other products, technical capabilities, and decision support and alert capabilities.
- The lowest rated attributes included: need for customization, navigation and scrolling necessary to complete tasks, and user interface with other systems and networks.

More than half of states would not recommend their EHR to others. In contrast, two-thirds of states using Netsmart's Avatar would recommend it. The greatest issues across all systems include the degree of customization and timeliness of support. Many EHR systems are component-driven – each component is added functionality and added cost, along with new implementation planning. A balancing

factor in recommending the EHR may be the level of internal support and expertise available.

### *Recommendations*

No state has an EHR that reportedly performed all functions needed and most states believed that their EHRs did not meet all their needs. States considering the implementation of any EHR should consider contacting states that have implemented that particular system and learn from their experiences. The EHR vendor should be willing to provide references to other states and psychiatric hospitals that use the product. States can also use the specific issues identified by other states as potential talking points when engaging an EHR vendor in a demonstration of its usability. While the most common EHR across states is Netsmart's Avatar product line, there are many other systems in use.

Some states are not addressing the issue of a certified EHR vendor that meets meaningful use criteria. When evaluating "meaningful use" criteria, state psychiatric hospitals need to look beyond the available measures toward the standard for the exchange of data among healthcare providers. While ARRA initially excluded psychiatric hospitals, states should be forward thinking in recognizing that the requirements will be there in the not-so-distant future. Meaningful use criteria are determined and re-evaluated by federal agency annually, and EHR vendors undergo formal testing of their systems to meet these criteria. States should always ask the vendor about its plans to maintain and meet future meaningful use criteria.

The survey responses also highlight some key considerations for an initial EHR system or migration to a new EHR system.

- Local IT resources must be available to maintain the system, provide training, and offer additional reporting functionality.
- Standardization of forms and processes across the various hospitals in the state should be completed prior to implementing a new EHR.
- Some customization may be needed for the state's unique needs (patient or service); however, over-customization can lead to an out-of-date product that is not easy to upgrade.
- Ease of migrating historical data on patients and services provided into the new system.

The implementation of EHR technology should bring together a team of stakeholders. The team should cover all aspects of hospital operations, as well as integration across hospitals. States should recognize that there will be competing interests, and compromises that are win-win should be sought. Ease of use may benefit the direct entry of clinical data but may make reporting on volume and outcomes more problematic (excessive programming). A common complaint of the EHRs was that states found the system difficult to navigate. The EHR is foremost a tool to record clinical care, to allow the clinical team to dialogue about the patient's concerns, clinical approaches, and outcomes of treatment. It is ultimately the patient's record of their care. These perspectives need to be given significant consideration in the assessment of the usability of the EHR. Looking into the future, key attributes that an EHR should include:

- End user experience that is not burdensome and adds value to the clinicians' experience
- eMAR and CPOE as standard components
- Allowance for truly integrated documents (treatment plans and aftercare plans)
- Ability to track authorizations and signatures
- Ability to synthesize patient level data for quality measures
- Ability to provide linkage to other healthcare information systems
- Ability to transmit selected healthcare data to the next care provider
- Ability to exchange standardized data with healthcare information service providers
- Ability to integrate with or serve as a decision-support system for system evaluation and program planning

States are a tremendous resource to each other as they build and update their own EHR systems with the common goals of improved patient outcomes, staff satisfaction, and fiscal responsibility.

## References

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<sup>2</sup> Kokkonen, E. W., Davis, S. A., Lin, H. C., Dabade, T. S., Fieldman, S. R., & Fleischer, A. B. (2013). Use of electronic medical records differs by specialty and office settings. *Journal of the American Med Inform Association*, 20(e1), e33-e38

<sup>3</sup> Centers for Medicare & Medicaid Services. (2018). *Promoting interoperability (PI)*. Retrieved from <https://www.cms.gov/Regulations-and-Guidance/Legislation/EHRIncentivePrograms/index.html?redirect=/EHRincentivePrograms/>

<sup>4</sup> Centers for Medicare & Medicaid Services. (2018). *Inpatient psychiatric facility quality reporting (IPFQR) program*. Retrieved from <https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/HospitalQualityInits/IPFQR.html>

<sup>5</sup> Data.Medicare.gov. (n.d). *Inpatient psychiatric facility quality measure data – by facility*. Retrieved from <https://data.medicare.gov/Hospital-Compare/Inpatient-Psychiatric-Facility-Quality-Measure-Dat/q9vs-r7wp>

<sup>6</sup> Overview. (2018, October 04). Retrieved October 18, 2018, from <https://www.cms.gov/Regulations-and-Guidance/Legislation/EHRIncentivePrograms/index.html?redirect=/ehrincentiveprograms>

<sup>7</sup> Introduction. (2017, January 18). Retrieved November 29, 2018, from <https://www.cdc.gov/ehrmeaningfuluse/introduction.html>