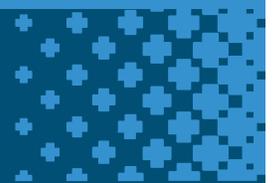


BLACK BOOK™
MARKET RESEARCH

2019 STATE OF GLOBAL EHR & HEALTHCARE IT ADOPTION

**VENDOR COMPETITIVE ANALYSIS BY REGION
COUNTRY PROFILES & UPDATES**





BLACK BOOK™ MARKET RESEARCH

About Us

Black Book Market Research is the parent group for Black Book Rankings, a full-service healthcare-centric market research and public opinion research company. Founded in 2002, the company today serves a wide variety of prominent national and international clients. Black Book Rankings offers complete quantitative and qualitative research services, excelling in the design of customized surveys and research approaches to meet specific client needs in healthcare, pharmaceuticals, biomedical devices, managed care, health insurance, and technology. A large segment of Black Book resources is devoted to health care technology and services client experience polling and research. In addition to serving health care organizations and associations with their research needs regarding patient satisfaction, physician performance, and service development opportunities, the company also serves national health care consultants to government, media and financial/investment agencies.

We annually evaluate leading healthcare/medical software and service providers across 18 operational excellence key performance indicators completely from the perspective of the client experience. Independent and unbiased from vendors' influence, over 650,000 healthcare IT users are invited to contribute. Suppliers also encourage their clients to participate to produce current and objective customer service data for buyers, analysts, investors, consultants, competitive suppliers and the media. For more information or to order customized research results, please contact the Client Resource Center at +1 (800) 863-7590 or Research@BlackBookMarketResearch.com

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Our Expertise

We possess expertise in a range of survey research services including, but not limited to:

- Black Book Rankings™
- Vendor Comparisons and Report Cards
- Custom Polling for Client Base and Target Markets
- Patient & Health Consumer Satisfaction
- Market & Competitive Intelligence
- Public Opinion Polling and Political Party Member Sentiments on Healthcare Issues
- Sentiment Analysis
- Vendor Public Relations, Marketing and Business Development

- Opinion Mining

Black Book conducts small-scale and large-scale research projects to measure many items of interest, including image, attitudes, opinions, awareness and market share. Our staff will be glad to discuss your research needs with you, refine your research objectives and make recommendations regarding optimal research methods. We will share our experience relevant to your project and develop a proposal to fit your budget.

Areas of Expertise

Black Book Rankings has had the opportunity to conduct a wide variety of research and analytical projects. Listed below are some industries we have assisted as well as some of the project topics:

- Healthcare Industry and Hospitals
- Medical and Physician services
- Public policy issues and Government Stimulus/Incentive programs
- Healthcare Consumer behavior
- Insurance and managed care
- Outsourcing & Managed Services
- Consultants & Advisory Services
- Cybersecurity
- Group Purchasing Organizations

Research Methodology

Our research process consists in large part to primary research, yet we also refer to creditworthy secondary sources. We have developed specialized surveying tools, opinion mining and knowledge management systems that capture relevant, accurate, and unbiased information in the global marketplace. Some of our primary research survey functions involve:

- Trend Studies
- Interviews
- Cohort Studies
- Executive (B2B)
- Questionnaires
- Telephone
- Internet

With a strong methodology we capture customer perceptions both in surveys and focus group settings, mining information about buying behavior and the utilization of products and services.



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Black Book's unrivaled objectivity and credibility is perhaps your greatest assurance. We have no incentive to recommend specific EHR software vendors. Our only allegiance is to help you achieve the results you want with the best possible solution.

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Abbreviations Used

CAGR	Compound Annual Growth Rate
EHR	Electronic Health Record
EMR	Electronic Medical Record
GDP	Gross Domestic Product
HIE	Health Information Exchange
HIMSS	Healthcare Information and Management Systems Society
HISN	Healthcare Informatics Society of Nigeria
HIT	Health Information Technology
IT	Information Technology
KPI	Key Performance Indicator
LTC	Long-term Care
NHI	National Health Insurance
PACS	Picture Archiving and Communication System
PHR	Personal Health Record
SUS	Sistema Único de Saúde (Unified Health System)
WHO	World Health Organization

Executive Summary

The study provides an in-depth analysis of the digital medicine market worldwide along with current vendor trends and future estimations. It also provides a quantitative and qualitative analysis for the period after 2018 to enable stakeholders to capitalize on the prevailing opportunities in health IT and EHR adoption. The world health information technology is segmented based on technology and geography. Based on technology, the market is segmented into mobile health, EMR/EHR, telehealth and wireless health. The market is analyzed across geographical regions namely North America, South America, Europe, Africa, Australia, and Asia.

IT, or the application of computers to store, retrieve, transmit, and manipulate data, in healthcare is changing the way data is documented, stored, viewed, retrieved, shared, managed and consumed. Electronic health records have great potential in terms of improving health care, facilitating the rapid and accurate transmission of patient data, standardizing medical procedures, supporting decision making and allowing for the prevention of medical errors in real time. The use of IT in the health sector has been associated with improvements in safety and quality indicators, as well as cost optimization. A major transition is underway in patient-related data documentation with the adoption of EMRs.

Key EHR players profiled in the big data analytics in healthcare market report include All Scripts, Cerner, InterSystems, ChipSoft, Orion Health, Everis, and Neusoft. These players have adopted various strategies such as merger & acquisition or strategic alliance with start-ups and well-established players to expand their market presence and enhance their product portfolio. The presence of numerous private players, a growing use of healthcare apps, patients support for digital medicine, and the variation in mobile apps technology offer lucrative business opportunities for the market to nurture.

Digital medicine technology is an innovative technological technique that has bridged the unsought gap between healthcare and digital technology. Digital medicine technology is more privileged than current medical practice since it is more precise, effective, well distributed, and feasible. Mobile health or m-health is the most popularly used application for clinical assistance in diagnosis, remote monitoring, reminders, alters, and references applications. Recent success in digital medicine services implements the measurements of heart rhythm or rate, stress levels, blood pressure, oxygen concentrations and even management and prevention of chronic or acute conditions.

The global digital medicine market is expected to register substantial growth in the near future, which is associated with high usage of smartphones, rising healthcare expenditures, expansion of software companies, high percentage of population with chronic diseases, and mobile phone proliferations. Other factors driving the market are rising of biopharma and biotechnological institutes, augmented R&D investment on digital medicine and rising awareness of personalized healthcare. However, factors such as huge capital investment, lack of medical knowledge and limited functionality of apps are likely to restrain the growth of market. In addition, the regulations and approvals by government imposed on the product can challenge the industrial growth.

Though vendors operating across the big data analytics in healthcare market are concentrating on bringing interoperability and better health information technology through big data analytics to hospitals and health systems, their customers are still focusing mostly on securing the sensitive health data, ensuring patient safety and improving operational efficiencies. Furthermore, growth in awareness about adopting population health management and clinical analytics is boosting the growth of this market.

KEY BENEFITS FOR STAKEHOLDERS:

- This report provides an extensive analysis of the current and emerging market trends and dynamics in the global electronic health market.
- This study evaluates the competitive landscape along with value chain has been taken into account to help in understanding the competitive environment across the geographies.
- Region-wise and country-wise global digital medicine market conditions are comprehensively analyzed in this report. High usage of smartphones, rising healthcare expenditures, expansion of software companies, high percentage of population with chronic diseases, and mobile phone proliferations are expected to drive the growth of the market.
- This report entails the detailed quantitative analysis of the current market and estimations after 2018 which assists in identifying the prevailing market opportunities.
- An in-depth analysis of current research and clinical developments representing EHR adoption and IT health market is provided with key market dynamic factors that help in understanding the behavior of the market.

With collective industry experience from analysts and experts, Black Book Market Research covers most accurate research methodology for its market intelligence and industry analysis. We not only engrave the deepest levels of global markets but also sneak through its slimmest details. Black Book™ surveyed 1,809 physicians, health administrators, technology managers and clinical leaders in ambulatory and inpatient settings across thirteen foreign countries to help global stakeholders identify gaps, challenges and successes in healthcare IT adoption and EHR systems connectivity. Our approach helps in building greater market consensus view for size and industry trends within each industry segment.

Twenty-one countries in some phase of national EHR adoption were included in the sweeping seven-month poll of EHR users on the respective infrastructure and adoption of their countries, as well as the EHR vendors receiving the highest satisfaction scores in those respective locations. We carefully factor in industry trends and real developments for identifying key growth factors and forecasted opportunities. Our research process is designed to deliver balanced view of the global markets and allow stakeholders to make informed decisions to attain KPIs. We offer our clients exhaustive research and analysis based on wide variety of factual inputs which largely include interviews with industry participants, reliable statistics and regional intelligence. Our in-house industry experts play instrumental role in collecting data that enhance the accuracy of our recommendations and advice. With a strong methodology we are, therefore, confident that our research and analysis are most reliable and guarantees sound business planning.

Citations

Colleti, Jose, Alice Barone de Andrade, and Werther Brunow de Carvalho. *Evaluation of the use of Electronic Medical Record Systems*. Brazil, 2018. Web. 1 June 2019.

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2019 IT & EHR ADOPTION – BLACK BOOK METHODOLOGY

HOW THE DATA SETS ARE COLLECTED

Black Book collects ballot results on 18 performance areas of operational excellence to rank vendors by electronic medical and health record product lines. The gathered data are subjected immediately to an internal and external audit to verify completeness and accuracy and to make sure the respondent is valid while ensuring that the anonymity of the client company is maintained. During the audit, each data set is reviewed by a Black Book executive and at least two other people. In this way, Black Book's clients can clearly see how a vendor is truly performing. The 18 criteria on operational excellence are subdivided by the client's industry, market size, geography and function outsourced and reported accordingly. Situational and market studies are conducted on areas of high interest such as e-Prescribing, Health Information Exchange, Accountable Care organization, hospital software, services providers, educational providers in e-health, bench markers and advisors. These specific survey areas range from four to 20 questions or criteria each.

UNDERSTANDING THE STATISTICAL CONFIDENCE OF BLACK BOOK DATA

Statistical confidence for each performance rating is based upon the number of organizations scoring the electronic medical and health records service. Black Book identifies data confidence by one of several means:

- Top ranked vendors must have a minimum of ten unique clients represented. Broad categories require a minimum of 20 unique client ballots. Data that are asterisked (*) represent a sample size below required limits and are intended to be used for tracking purposes only, not ranking purposes. Performance data for an asterisked vendor's services can vary widely until a larger sample size is achieved. The margin of error can be very large, and the reader is responsible for considering the possible current and future variation (margin of error) in the Black Book performance score reported.
- Vendors with over 20 unique client votes are eligible for top 10 rankings and are assured to have highest confidence and lowest variation. Confidence increases as more organizations report on their outsourcing vendor. Data reported in this form are shown with a 95% confidence level (within a margin of 0.25, 0.20 or 0.15, respectively).
- Raw numbers include the quantity of completed surveys and the number of unique organizations contributing the data for the survey pool of interest.



WHO PARTICIPATES IN THE BLACK BOOK RANKING PROCESS

Over 50,000 health information technology users ranking from hospital and medical practice executives, clinicians, IT specialists and front-line implementation veterans are invited to participate in the 2019 annual Black Book EMR EHR e-Health initiative satisfaction survey. Non-invitation receiving participants must complete a verifiable profile, utilize valid corporate email address and are then included as well.

The Black Book survey web instrument is open to respondents and new participants each year at <http://blackbookrankings.com> and mobile applications from iTunes and GooglePlay. Only one ballot per corporate or public agency email address is permitted per location and changes of ballots during the open polling period require a formal email request process to ensure integrity.

The members of 18 professional healthcare associations, 9 media outlets and returning participants with previous identification verifications are among those invited to surveys. Nearly 50,000 email addresses from international marketing companies are also sent notifications of the survey availability in Q1. Individuals and provider management can register as new participants on mobile applications and online polling instruments. Ballots are validated through two independent survey verification services software companies before being included in the scoring process.

Additionally, over 7,000 about-to-be users and those in the replacement phases to a non-original system EHR and HIT answered questions about budgeting, vendor familiarity and vendor selection processes but current non-user ballots are not counted in the vendor ranking process of client satisfaction.

Global EHR/HIT Market Overview

The development of health information technology has been a major project around the globe. Though there has been some recent collaboration among countries and their progress concerning electronic health technology, there has been a lack of focus on the approaches that each country has taken in order to successfully achieve EHR models that help alleviate medical costs and improve patient care through this technological innovation. Here we will focus on thirteen countries across six continents and their methods of EHR development thus far and their successes and failures in their attempts to implement this technology. They have made a huge investment in resources and time in order to develop EHR technology because health IT adoption is extremely important for healthcare systems around the globe. Electronic health records offer the promise of system-wide quality improvement, cost containment, and overall improved access to care.

The global big data analytics in healthcare market is projected to witness significant growth, especially in North America and Europe due to increase in adoption of big data analytics and rise in need for business intelligence in the healthcare industry across these regions. The big data analytics in healthcare market is projected to grow at a CAGR of 19.1% from 2018 to 2025, owing to increase in regulatory compliance and rise in need for business intelligence to optimize health administration. Big data analytics in healthcare market in several European and Asia-Pacific countries, including Finland, Sweden, China, Japan, and many others, possess high market potential due to strong government support and increase in cloud adoption among the end users.

The number of EHR vendors has diminished in recent years following numerous mergers and acquisitions dropping from 1,000-plus 10 years ago to approximately 400 now, according to KLAS Research, a Utah-based health IT review firm. They expect more vendor consolidation in the near future. This fact could leave physicians with a host of problems, such as reduced levels of tech support, increased fees, and the need to migrate to a new system. Problems like these are sure to cause a loss in productivity. For this reason, physicians must know how to handle and relocate their current data in case their current vendor makes adjustments. The decrease in the number of EHR vendors is not all negative. Consolidation could yield benefits such as increased interoperability among physician office systems as there will be fewer systems with unique integration requirements. We expect to see a lot more innovation as a result and that's good for doctors and, more importantly, it's good for patients.



Exchange of health information through interoperable systems is an essential goal as providers transition from hard to digital copies of medical records. Paper records had some obvious disadvantages. They took up space, they were difficult to share with other doctors, hospitals, and insurance companies. Interoperable systems ensure that electronic health information can be used and exchanged without any special effort from the sender or receiver through the use of a common language. Without interoperable systems, the full potential benefits of adopting EHR cannot be achieved.

Over the next five years, industry experts predict big changes that will significantly impact managed care. As industries continue to blur, traditional healthcare companies will need to break down silos to drive value across the industry ecosystem. To compete with disruptors, healthcare companies will need to capitalize on data, maximize profitability, and innovate patient care all while managing growing risk in the areas of patient privacy and data security. It's a daunting challenge, but preparation can help ensure success. Below are some areas of disruption that could impact your medical organization.

Some criticisms include that EMRs absorb the medical and multidisciplinary team's time, thereby reducing their time at the patient's bedside. There are questions regarding the origin of EMRs, as some emerged from commercial interests in improving hospital billing and were adapted for clinical use, while others were developed based on clinical applications.

Some EMRs interact with prescribers, warning of drug interactions and blocking incorrect administration routes, while others assist in inventory control or facilitate communication with clinical analysis laboratories and diagnostic imaging services. Others are less sophisticated and ultimately are not user-friendly; therefore, they place an extra workload on the prescriber.

Health care leaders need to maintain a learning environment that offers resources for health care practitioners who find themselves in redefined roles with the implementation of the new technologies. At this moment, health providers are finding themselves navigating and entering information into an unknown software's database. A present issue that these stakeholders are witnessing is that more time is being spent on entering patients' information and searching drop-down menus as opposed to interacting with the patient.

Collaboration should be of key importance. It is imperative for stakeholders across the health care ecosystem to collaborate around an all-encompassing approach to funding and delivering sustainable health care.

Investments in technology, such as virtual health and telehealth, could expand services while also helping hospitals bend the cost curve. This will allow medical doctors to reach people who live in underprivileged neighborhoods and rural places without having to establish a physical locale in that area. Regardless if the patient has monetary restraints, inconvenient weather conditions, or poor infrastructure they can remain in the comfort of their home while receiving medical instructions for themselves or family members.

We must expand our current expectations for telemedicine and meaningfully embed this tool into our daily practice. State of the art virtual care software platforms can be used to harness online patient interviews to transform the way patients can access their physician. Based upon condition and symptoms, patients are guided through a branching process of detailed questions. For example, a young female with insomnia may answer a chain of questions about the duration of symptoms, history, allergies, and acknowledgement of any red flags. Following this structured framework of questioning (which mirrors that performed during an in-person interview) a templated document is generated and forwarded to their physician for review. In the case of unfamiliar concerns, pictures can be uploaded as well. The physician can review documents and choose to treat or to refer for the appropriate level of evaluation. If treatment is provided, a few clicks generate sufficient documentation to pay directly. Such platforms furnish evaluation and offer efficient treatment for simple, acute conditions. As digital monitoring capabilities continue to improve and artificial intelligence progresses, these capabilities will only become more valuable. It is essential that telemedicine complement and expand our daily healthcare delivery.

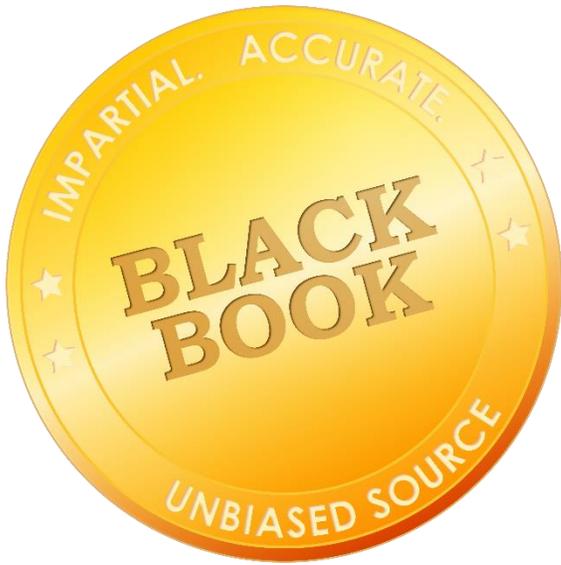
When dealing with personal information, medical professionals should consider mandatory business asset protection and risk management. This level of security should be ruled out to devices that combine hardware and software for a specific medical or administrative function and electronic data storage devices and backups. As healthcare becomes more wired and interconnected, cybersecurity has become a primary concern of hospitals. Healthcare facilities have been the target of many high-profile attacks that have cost millions and can cause a major disruption in patient care since its systems are shut down or data is blocked by hackers. For this reason, many vendors highlighted their security software for ancillary devices that are connected to the EMR, PACS or hospital information systems. The vendors whom they partnered with must select top-notch professional IT support that includes security software and online security training for their staff.

On the topic of safety, some medical practitioners are considering accepting online payments. According to 2018 data compiled by MedData, 83% of physician practices with fewer than five practitioners reported that their top collection challenge was slow payment among high-deductible plan patients. Physicians should take advantage of some form of online payment service, whether an app or a patient portal. Patients use smartphones for so many purchases it only makes sense that they want to pay for their healthcare that way. When we offer more convenience to a patient, the more likely the patient will participate. PayPal or a bank's basic shopping cart function may be of assistance in this case. It is recommended to have a tight integration between your payment app and your practice management system. Such an execution must be carefully assessed as they may cause violations; such as those covered under HIPAA in the United States.

Now that national policy and guidelines have been developed for EHR vendors and medical facilities, the initial stages of EHR implementation and optimization should be focused on single medical facilities and hospitals. In order to successfully optimize this complex technology and eventually address the difficult task of interoperability across a country, individual systems must be fully operational, and all medical professionals need to have a firm understanding of how this technology works. While hospitals and health care providers are focusing on fully optimizing this technology internally, the government and state officials should begin collaborating on how to make interoperability successful and allow this technology to abide by all state privacy laws.

Citations

Castillo, Anabel, Marvin Sirbu, and Alexander L. Davis. *Vendor of Choice and the Effectiveness of Policies to Promote Health Information Exchange*. USA, 2018. Web. 1 June 2019. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5987601/>



HEALTH IT & EHR DYNAMICS BY REGION/COUNTRY

North America/Central America

Canada

EHR Status

An interoperable electronic health record is a secure consolidated record of an individual's health history and care, designed to facilitate authorized information sharing across the care continuum. Each Canadian province and territory has implemented such a system and for all, measuring adoption is essential to understanding progress and optimizing use in order to realize intended benefits. The federal government created an independent organization called Canada Health Infoway, which is fully funded by the government and managed by Deputy Ministers of Health. This organization is charged with the responsibility of creating and promoting the use of EHRs and electronic health information systems. This ensures the sharing of medical records and health knowledge among the federal, provincial and territorial areas across the country.

About 250,000 health professionals, approximately half of Canada's anticipated potential physician, nurse, pharmacist, and administrative users, indicated that they electronically access data, such as those found in provincial/territorial lab or drug information systems, in 2015. Trends suggest further growth as maturity of use increases. The iEHR acts as a complement to point of service systems like electronic medical records (EMR) in physician offices or clinical information systems in hospitals. Regular measurement of adoption and maturity for these technologies has made progress easy to follow and manage. For example, in the 2014 National Physician Survey, 77 % of all family physicians reported they do use electronic records to enter and retrieve clinical notes.

There is strong interest in health information exchange through the iEHR in Canada, and continued growth in adoption is expected. Central to managing the evolution of digital health is access to robust data about who is using solutions, how they are used, where and when. Stakeholders such as government, program leads, and health system administrators must critically assess progress and achievement of benefits, to inform future strategic and operational decisions.

In Canada, as iEHRs are moving from the deployment stage towards broad clinical adoption, the focus will need to shift towards optimization of these systems to meet clinical and consumer needs. Comparable systems and initiatives internationally, such as HIE in the United States, have demonstrated the electronic health record as a foundation technology for improved utilization of services, improved chronic disease management and more patient-centered care and a powerful source of information to manage the health system. 76% of hospitals reported exchanging data with outside health professionals in 2014; up from 62 in 2013 and 41 % in 2008.¹

Market Dynamics

Income is a determinant of health, and over the past 20 years in Canada, as income inequality has increased, so has health care inequality. Unequal experience of health care is also affected by population density: while 19 percent of Canadians live in rural areas, only 8 percent of physicians practice in those areas. Furthermore, we have accepted unequal health care outcomes, particularly in areas with lower population density. A recent study found that the mortality rates following strokes were higher than those in than urban academic hospitals and higher than the Canadian average.

The way people experience health care in Canada is inconsistent, especially with regard to access to online appointments, test results and virtual consultations. Because of privacy concerns, management of health care data is specific to the provider. As a result, the data is kept in disparate places, so frequently the data must be re-entered. As well, in the absence of portals and online access, citizens and families are managing their own health information, often turning to the Internet. Furthermore, the system lacks accountability, because it does not consider consumers' experience of data access management as an important criterion and therefore does not evaluate it.

The main challenges facing the Canadian healthcare system are: rising healthcare costs, increased incidents of chronic disease, and long waiting times for healthcare services. The government has put various measures in place in an attempt to control costs, such as: negotiating lower prices for pharmaceuticals, mandatory global budgets for regional health authorities and hospitals, resource restrictions, and restrictions on investment.

Compared with other OECD, Organization for Economic Cooperation and Development, countries that have universal health care systems, Canada ranks among the lowest for health system performance, although it spends more on health care delivery than many OECD countries. It ranks low on performance as wait times continue to increase, providers are not available, and constrained dental care/insurance. Overall, healthcare spending in Canada is 11% of GDP as of 2016, much higher than the OECD average of 8.9%.²

Considering the large amounts of capital invested in health care delivery, Canadians are eager to adopt digital health solutions that could dramatically improve the system. Such tools would validate two of the pillars of the Canada Health Act: accessibility and portability. By improving the accessibility and national portability of health care services Canada can make its system more patient-centric. The country has a predominantly publicly financed and administered health care system. The Canada Health Act is Canada's federal health insurance legislation and defines the national principles that govern the Canadian health insurance system, namely, public administration, comprehensiveness, universality, portability and accessibility.

- Public administration means that provincial insurance programs must be publicly accountable for the funds they spend. Provincial governments determine the extent and amount of coverage of insured services.
- Accessibility means that Canadians must have reasonable access to insured services without charge or paying user fees.
- Comprehensiveness means that provincial health insurance programs must include all medically necessary services, "for the purpose of maintaining health, preventing disease, or diagnosing or treating an injury, illness or disability."
- Universality means that provincial health insurance programs must insure Canadians for all medically necessary hospital and physician care.
- Portability means that Canadians are covered by a provincial insurance plan during short absences from that province.³

To realize a consumer-driven health care system that truly enables equal access and portability for all Canadians, some pivots will be required. The federal, provincial and territorial governments would need to tackle the current fee structures to fairly compensate physicians for remote and virtual services. But first, the federal government should lead development of a national strategy for the adoption of health care innovations, and a policy framework for the adoption of digital health care solutions. Without such interventions at the federal level, the consumer experience will continue to change very slowly.

Constraints

A number of key factors will have to be addressed at national, provincial and territorial health tables to create an environment where the current model can incorporate digital health tools. There are structural biases in the system, such as fee structures for physicians that favor providers over patients. This can result in negative patient experiences like long waiting times, telephone tag with the provider, anxiety over unknown results, or process updates not well communicated.

An additional hindering factor is that physicians are not consistently compensated for signing patients onto on-line portals, for virtual visits, or for virtual-care provision. There is a tremendous opportunity for growth in digital health if only doctors were incentivized and compensated adequately for remote and virtual services performed with their patients.

Residents are proud of their publicly funded system. With national cohesion and leadership, we can better ensure a digital future and improve adherence to the goals of portability and accessibility of health care. National policy makers have an obligation to ensure that the transition toward this end is consistent and fair for all.²

Opportunities

While the journey toward a fully patient and family-centric approach to health care will be long, there are measures that governments could initiate to accelerate the process.

To begin, 90% of consumers are willing to share data from wearable health devices with their doctors and nurses or with other health care professionals, 88%. Compared to 2016, more are now willing to share wearables data with online communities or other app users (up from 38 percent in 2016 to 47 percent in 2018). And 38 percent of those people have accessed their electronic health records. In 2017 almost 9 out of 10 health care professionals agree that accessible, secure information-sharing between individuals and health care professionals would have a positive impact on patients' health outcomes. Governments must adjust the fees paid to physicians so that they are compensated adequately and fairly for the preparation and execution of visits with patients and family members that are conducted through virtual consultations, tele-visits, e-consults and online chats. While some provinces, such as British Columbia and Alberta, have implemented pilots or revised fee structures, there is no consistent strategy. In provinces where physician billing structures have been modified to allow for virtual consultations, interprovincial licensing and regulations might prohibit physicians from being able to employ these modifications across provincial borders.

On top of that, cloud solutions can enable communication infrastructure that is critical to advancing this agenda. The federal and provincial governments should collaboratively design a policy framework for the effective adoption of secure digital health solutions. It is time to enable new technologies to provide secure data oversight, such as cloud solutions. This could pave the way for shared policies and standards that will allow us to take full advantage of the significant data generated by our single-payer health care system. Innovations such as value-based care, population health management, and digital or mobile-user demand would require more storage infrastructure. Past concerns about privacy and security related to hosting data in cloud servers outside of Canada have largely been resolved by cloud providers building infrastructure here to house the data.

Observing how digital tools have impacted sectors ranging from financial services to education, it is likely that health care will not be immune to these disruptive technologies. Canadians are forging toward a new way of using digital tools and devices for personal health care purposes, leveraging mobile apps, websites and wearables to harness personal health data wherever it is available. They are already driving a consumer-centered approach to health care information management.²

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CANADA

2019 EHR SURVEY RESPONSE RATES BY PRACTICE/ORGANIZATION TYPE, VALIDATED SYSTEM USERS 403 RESPONDENTS

2019 SURVEY RESPONDENT IDENTIFICATION	PERCENT OF TOTAL RESPONSES
Physician/Clinician Name	11%
Clinic/Practice Name	15%
Public Clinic	13%
Health System Clinic	28%
Academic Hospital and Medical Centers over 250 Beds	17%
Community Hospitals	7%
Small Hospitals under 100 Beds	0%
Ambulatory Surgery Centers	9%
TOTAL	100%

Source: Black Book™ 2019

2019 RESULTS: CANADA

ELECTRONIC HEALTH RECORDS & PRACTICE TECHNOLOGY



HEALTH INFORMATION SYSTEMS

STOP LIGHT SCORING KEY

2019 TOP OVERALL AMBULATORY EHR EMR HIT VENDOR HONORS

CANADA

ALLSCRIPTS

FUNCTIONAL SUBSET HONORS: TOP VENDORS FOR CANADA

TOP VENDOR: PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING

ALLSCRIPTS

TOP VENDOR: INTEROPERABILITY, COMMUNICATIONS AND CONNECTIVITY

CERNER

TOP VENDOR: ORDER ENTRY AND MANAGEMENT

ALLSCRIPTS

TOP VENDOR: RESULTS REVIEW/MANAGEMENT AND DECISION SUPPORT

ALLSCRIPTS

STOP LIGHT SCORING KEY

FIGURE 1: COMPREHENSIVE END-TO-END EMR VENDORS ARE DEFINED AS BEING COMPRISED OF FOUR SURVEYED FUNCTIONS			
PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & INTEROPERABILITY, CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/MANAGEMENT

Source: Black Book Research

FIGURE 2: KEY TO RAW SCORES			
0.00 – 5.79 ▶	◀ 5.80 – 7.32 ▶	◀ 7.33 – 8.70 ▶	◀ 8.71 – 10.00
Deal breaking Dissatisfaction	Neutral	Satisfactory performance	Overwhelming satisfaction
Does not meet expectations	Meets/does not meet expectations consistently	Meets expectations	Exceeds expectations
CANNOT RECOMMEND VENDOR	WOULD NOT LIKELY RECOMMEND VENDOR	RECOMMENDS VENDOR	HIGHLY RECOMMENDED VENDOR

Source: Black Book Research

STOP LIGHT SCORING KEY

FIGURE 3: COLOR-CODED STOP LIGHT DASHBOARD SCORING KEY	
Green 8.71 +	(Top 10%) scores better than 90% of EHR vendors. Green coded vendors have received constantly highest client satisfaction scores.
Clear	(Top 33%) scores better than 67% of EHR vendors. Well-scored vendor which have middle of the pack results.
Yellow 5.80 to 7.32	Scores better than half of EHR vendors. Cautionary performance scores, areas of improvement required.
Red Less than 5.79	Scores worse than 66% of EHR vendors. Poor performances reported potential cause for contract cancellations.

Source: Black Book Research

STOP LIGHT SCORING KEY

FIGURE 4: RAW SCORE COMPILATION AND SCALE OF REFERENCE

Black Book raw score scales

1 = Deal breaking dissatisfaction ◀ ▶ **10 = Exceeds all expectations**

Source: Black Book Research

Individual vendors can be examined by specific indicators on each of the main functions of EHR vendors as well as grouped and summarized subsets. Details of each subset are contained so that each vendor may be analyzed by function and end-to-end EHR services collectively.

STOP LIGHT SCORING KEY

FIGURE 5: SCORING KEY							
OVERALL RANK	Q1 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
5	1	EHR NAME	8.49	8.63	8.50	8.01	8.66

Source: Black Book Research

- Overall rank – this rank references the final position of all 18 criteria averaged by the mean score collectively. This vendor ranked fifth of the 20 competitors.
- Criteria rank – refers to the number of the question or criteria surveyed. This is the sixth question of the 18 criteria of which this vendor ranked first of the 20 vendors analyzed positioned only on this particular criteria or question. Each vendor required ten unique client ballots validated to be included in the top ten ranks.
- EHR Company – name of the EHR vendor.
- Subsections – each subset comprises one-fourth of the total EHR vendor mean at the end of this row and includes all buyers and users who indicate that they contract each respective EMR functional subsection with the supplier, specific to their physician enterprise.
- Mean – congruent with the criteria rank, the mean is a calculation of all three subsets of EHR functions surveyed. As a final ranking reference, it includes all market sizes, specialties, delivery sites and geographies.

OVERALL KPI LEADERS

CANADA

Summary of criteria outcomes

SUMMARY OF CRITERIA OUTCOMES		
Total number one criteria ranks	Vendor	Overall rank
9	ALLSCRIPTS	1
4	MEDITECH	2
5	CERNER	3

Source: Black Book Research *

OVERALL KPI LEADERS: AMBULATORY EHR

CANADA

Top score per individual criteria

TOP SCORE PER INDIVIDUAL CRITERIA			
Questions	Criteria	EHR Vendor	Overall
1	Strategic Alignment of Client Goals	ALLSCRIPTS	1
2	Innovation & Optimization	ALLSCRIPTS	1
3	Training	MEDITECH	2
4	Client relationships and cultural fit	ALLSCRIPTS	1
5	Trust, Accountability, Transparency, Ethics	ALLSCRIPTS	1
6	Breadth of offerings, client types, delivery excellence	CERNER	3
7	Deployment and outsourcing implementation	CERNER	3
8	Customization	MEDITECH	2
9	Integration and interfaces	CERNER	3
10	Scalability, client adaptability, flexible pricing	ALLSCRIPTS	1
11	Compensation and employee performance	MEDITECH	2
12	Reliability	ALLSCRIPTS	1
13	Brand image and marketing communications	CERNER	3
14	Marginal value adds and modules	MEDITECH	2
15	Financial & Managerial Viability	CERNER	3
16	Data security and backup services	ALLSCRIPTS	1
17	Support and customer care	ALLSCRIPTS	1
18	Best of breed technology and process improvement	ALLSCRIPTS	1

INDIVIDUAL EHR VENDOR KEY PERFORMANCE INDIVIDUAL EHR VENDOR KEY PERFORMANCE

KEY

A = 90% Agree
 B = 75% Agree
 C = 50% Agree
 D = 25% or Less Agree

RANK	EHR VENDOR CANADA	DELIVERED ON EXPECTATIONS	IMPLEMENTATION ON TIME	TOTAL COST OF OWNERSHIP ON BUDGET
1	ALLSCRIPTS	A	A	A
2	MEDITECH	C	A	C
3	CERNER	B	C	D
4	INTERSYSTEMS	B	B	D
5	EPIC SYSTEMS	C	D	D
6	HARRIS QUADRAMED	C	C	C

Individual EHR Vendor Key Performance

CANADA

Strategic Alignment of Vendor Offerings to Physician Practice Goals & Client's Mission

Table 5: Organizational structure meets the needs of stakeholders or customers and stakeholder satisfaction is the most important priority. EHR client is likely to recommend the vendor to similar sized physician groups, physicians within the same specialty or delivery setting.

OVERALL RANK	Q1 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	ALLSCRIPTS	9.70	9.38	9.66	9.45	9.55
3	2	CERNER	9.28	9.66	9.37	9.26	9.39
2	3	MEDITECH	8.79	8.98	8.92	8.71	8.85

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

CANADA

Innovation and Optimization

Table 6: Customers are also continuing to push the envelope for further enhancements to which the EHR vendor is responsive. EHR clients also believe that their vendors' technology is helping them manage practices more effectively, generate accurate records and reimbursement billings and cut their overhead in ways that were difficult or impossible to accomplish before electronic medical records were implemented. Vendor is responsive to make client recommendations with cutting edge improvements.

OVERALL RANK	Q2 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	Mean
1	1	ALLSCRIPTS	9.02	9.67	9.43	9.26	9.35
3	2	CERNER	9.22	9.34	8.68	9.18	9.11
2	3	MEDITECH	8.69	9.37	8.77	8.89	8.93

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

CANADA

Training

Table 7: Electronic medical and health record vendor leadership provides significant and meaningful training opportunities for internal employees and client staff. Leadership strives to develop technology staff, EMR/EHR client service and customer servicing consultant employees. Training modules are effective and practical so that minimal post-implementation training is required on or off site. Regular updates are timely and require minimal additional training to implement.

OVERALL RANK	Q3 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
2	1	MEDITECH	9.46	8.37	8.87	9.35	9.01
3	2	CERNER	8.99	8.79	9.20	8.86	8.96
1	3	ALLSCRIPTS	9.48	8.13	9.12	9.02	8.94

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

CANADA

Client relationships and cultural fit

Table 8: EHR vendor leadership honors customer relationships highly. The relationship with the EHR elevates the customer reputation. Improving physician practice and healthcare delivery efficiency and effectiveness is a priority of the supplier. Governance of engagement is neither complex for buyer nor does it require vendor management attention regularly. There is no regular transparency or quality issue. There are no culture clashes or misfits that threaten relationship's success or client's satisfaction.

OVERALL RANK	Q4 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	ALLSCRIPTS	9.74	9.31	9.80	9.53	9.60
2	2	MEDITECH	8.80	8.74	8.92	8.43	8.72
3	3	CERNER	7.78	9.20	9.15	8.30	8.61

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

CANADA

Trust, Accountability, Ethics and Transparency

Table 9: Trust in enterprise reputation is important to EHR clients as well as prospects. Client possesses an understanding that its EHR organization has the people, processes, and resources to effectively deliver the desired business and clinical results, based on its industry reputation and past performance. There are no disconnects between promises and delivery.

OVERALL RANK	Q5 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	ALLSCRIPTS	8.68	9.23	9.14	9.21	9.07
2	2	MEDITECH	8.00	9.39	8.34	9.05	8.70
3	3	CERNER	8.04	9.19	7.97	8.30	8.38

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

CANADA

Breadth of offerings, varied client settings, delivery excellence across all user types

Table 10: EMR/EHR vendor offers industry recognized horizontal functionality and vertical industry applications and manage bundled EMR services such as ePrescribing and developing new e-Health initiatives. Vendor routinely drives operational performance improvements and results in the areas they affect. Comprehensive offerings are constructed to meet the unique needs of the client’s EHR initiatives. Breadth of vendor modules offers comprehensive system services and broad modules.

OVERALL RANK	Q6 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
3	1	CERNER	9.34	9.66	9.14	9.17	9.33
1	2	ALLSCRIPTS	8.97	9.44	9.59	9.00	9.25
2	3	MEDITECH	8.95	9.45	9.34	8.61	9.09

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

CANADA

Deployment and EHR implementation

Table 11: EHR client deploys at a pace acceptable to the client. EHR solutions eliminate excessive supervision over vendor implementations. Vendor overcomes client implementation obstacles and challenges effectively. Technical, organizational and cultural implementation obstacles are handled professionally and punctually. EHR implementation time meets standard expectations. Implementations are efficient and sensitive to users' specific situations which may cause delays.

OVERALL RANK	Q7 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
3	1	CERNER	8.08	9.40	8.39	9.38	8.81
1	2	ALLSCRIPTS	8.68	8.95	8.78	8.59	8.75
2	3	MEDITECH	8.54	9.12	8.14	8.03	8.46

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

CANADA

Customization

Table 12: EHR products and process services are customized to meet the unique needs of specific practice client purpose, processes and physician models. Little resistance is encountered when changing performance measurements as clients' needs vary. Extraordinary efforts are made to adapt and convert client special needs into workable solutions with efficient cost and time considerations. EMR software allows for modifications that are not costly or complex.

OVERALL RANK	Q8 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
2	1	MEDITECH	9.00	8.28	9.49	9.10	8.97
1	2	ALLSCRIPTS	8.21	9.38	8.94	8.95	8.87
3	3	CERNER	7.76	8.82	8.35	8.13	8.27

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

CANADA

Integration and interfaces

Table 13: EHR vendor supports interfaces so information can be shared between necessary applications. Solutions are easily integrated to existing backend systems as needed and HIE feasible. Seamless interfaces to legacy applications are performed as required for optimal functioning. Human integration and interface activities are administered precisely. Systems communicate effectively among provider groups and ancillaries. True interoperability with other healthcare organizations is factored into implementation.

OVERALL RANK	Q9 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
3	1	CERNER	9.53	9.57	9.84	9.61	9.64
1	2	ALLSCRIPTS	9.38	9.75	9.78	9.28	9.55
2	3	MEDITECH	9.23	9.21	9.60	8.87	9.23

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

CANADA

Scalability, client adaptability, flexible pricing

Table 14: EHR services and solutions vendor provides flexible pricing allowing the client to choose and pay for the precise functionality and services needed. Vendor invests in significant infrastructure and has the ability to provide services to enterprise organizations. IT products and services meet the changing and varied needs of the EHR customer. Pricing is not rigid or shifting and meets needs of client.

OVERALL RANK	Q10 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	ALLSCRIPTS	9.74	9.00	9.35	9.79	9.47
3	2	CERNER	8.55	9.34	9.21	8.33	8.86
2	3	MEDITECH	8.34	9.00	9.29	8.18	8.70

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

CANADA

Vendor staff expertise, compensation and employee performance

Table 15: EHR vendor team of employees is considered top in industry for professionalism and skill. Vendor attracts and retains high performing staff. Vendor is focused on building and developing a strong employee team of producers. Employees act like owners/leaders. Company is moving towards leveraged pay at all levels. Vendor is using effective tools to tie performance metrics to compensation policy and compensating top leaders. Human resources-related criteria are scored from the client perspective on this indicator.

OVERALL RANK	Q11 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
2	1	MEDITECH	8.27	8.92	9.59	9.02	8.98
1	2	ALLSCRIPTS	8.50	8.43	7.40	8.56	8.81
3	3	CERNER	8.76	8.74	8.12	8.43	8.55

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

CANADA

Reliability

Table 16: EHR supplier meets agreed terms as evidenced by routine, acceptable service level reporting and industry expectations. Depth and breadth of applications/solutions are acceptable in meeting client needs. Online reliability meets expectations and outages/downtimes are minimized. Solid product and service capacities are demonstrated consistently. Service levels are consistently met as agreed. Services and support response is expedient and resources are appropriately provided by vendor team.

OVERALL RANK	Q12 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	ALLSCRIPTS	9.43	9.48	9.55	9.58	9.51
3	2	CERNER	9.51	8.69	9.08	9.03	9.08
2	3	MEDITECH	7.95	9.77	8.50	9.21	8.86

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

CANADA

Brand image and marketing communications

Table 17: EHR vendor’s marketing and sales statements/pitches are accurately and appropriately represented by actual EMR product and service deliverables. Image is consistent with top EHR rankings. Sales presentations and proposals are delivered upon and corporate integrity/honesty in marketing and business development are highly valued. Company image and integrity are values upheld top-down consistently. Elevated level of relevant client communications enhances the EHR vendor – EHR user relationship.

OVERALL RANK	Q13 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
3	1	CERNER	9.11	8.73	9.47	8.87	9.04
1	2	ALLSCRIPTS	8.99	9.46	8.86	7.92	8.81
2	3	MEDITECH	7.94	9.13	8.02	8.46	8.29

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

CANADA

Marginal value adds

Table 18: Beyond stimulus achievement, EHR vendors' cost savings are realized as generally estimated and not over-positioned or over/underestimated in ways that effect major client satisfaction or costs. Vendor offers value-adds as a practice management partner in cost savings and avoidance initiatives and creative programs through bundled EMR product design. Provides true business transformation opportunities to physician practices and other medical settings utilizing EHR.

OVERALL RANK	Q14 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
2	1	MEDITECH	8.49	9.53	9.74	9.08	9.21
1	2	ALLSCRIPTS	9.19	9.03	9.60	8.89	9.18
3	3	CERNER	7.62	9.01	9.33	8.54	8.63

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

CANADA

Viability and managerial stability

Table 19: Vendor’s viability, employee turnover, financial stability and/or cultural mismatches do not threaten relationship. Senior management and the board exemplify strong leadership principals to steward appropriate resources that impact EHR buyers. Client is confident of long-term industry viability for this vendor based on investments, client adoption, exceptional outcomes and service levels. Field management is notably competent, stable and supportive of clients. EHR vendor demonstrates and provides evidence of competent fiscal management and leadership.

OVERALL RANK	Q15 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
3	1	CERNER	9.83	9.46	9.74	9.49	9.63
2	2	MEDITECH	9.10	9.84	9.82	9.46	9.56
1	3	ALLSCRIPTS	9.03	9.78	9.24	9.34	9.35

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

CANADA

Data security and backup services

Table 20: In order to provide secure and constantly dependable EMR service offerings for physician and hospital/IDN affiliate practices and entities, an EHR vendor has to provide the highest level of security and data back-up services. EHR vendor's service in these two areas is superior to the security and back-up system of past internal systems of the physician practice.

OVERALL RANK	Q16 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	ALLSCRIPTS	8.96	9.65	9.43	8.93	9.24
2	2	MEDITECH	9.33	9.52	8.92	8.69	9.11
3	3	CERNER	8.95	9.48	8.77	8.99	9.05

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

CANADA

Support and customer care

Table 21: Account management provides an adequate amount of onsite administration and support to clients. There exists a formal EHR account management program that meets client needs. Media and clients reference this vendor as an EMHR services leader and top vendor correctly. Customer services and relationship satisfaction is manifested through significant flagship clients as well as smaller and newest customers similarly. Vendor provides appropriate number of accessible support and customer care personnel.

OVERALL RANK	Q17 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	ALLSCRIPTS	9.54	9.82	9.74	9.80	9.73
2	2	MEDITECH	9.07	9.78	9.85	9.47	9.54
3	3	CERNER	9.83	8.76	9.50	9.83	9.48

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

CANADA

Best of breed technology and process improvement developments

Table 22: EHR management and related technology services are considered best of breed. EHR Vendor technology elevates customers via capabilities, equipment, processes, deliverables, professional staff, leadership, quality assurance and innovative initiatives. EHR services are delivered at or above current/former in-house service levels. Technology is current and relevant to exchanging health information among providers, as well as sufficiently offering patient access.

OVERALL RANK	Q18 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	ALLSCRIPTS	9.28	9.18	9.63	9.13	9.31
3	2	CERNER	9.31	9.72	8.28	9.38	9.17
2	3	MEDITECH	8.54	8.91	8.74	9.40	8.90

Source: Black Book™ 2019

Mexico

EHR Status

EHR is a tool with the potential to improve the quality, safety, and efficiency of health services. It can also provide data for assessing the health status of the population and the performance of the health system itself. The collaborative effort of physicians, hospital administrators, IT specialists, and state officials was fundamental in the design and development process of EHRs utilized in the country.

In Mexico, different public and private healthcare institutions have adopted EHRs, including Mexico's Social Security Institute, the Institute for Social Security and Services for Government Employees, and the health services of several states and many private hospitals. As part of the national strategy for monitoring and improving the quality, functionality, and interoperability of EHRs in Mexico, in 2010 the General Directorate of Health Information published the Official Mexican Standard. However, the way in which EHRs have been introduced and their specific functionality have varied between institutions and states, mainly because they were developed and implemented before publication of the official standard.

The state of Colima demonstrated leadership and foresight with the development and implementation of an EHR beginning in 2005, called SAECCOL. Other states, such as Coahuila, Aguascalientes, and Yucatán, have expressed interest in adopting SAECCOL.¹

There was a common view that the EHR is a valuable tool, and most agreed it was necessary to use it more effectively to improve the quality of healthcare so that it mainly benefits patients. There were important differences among the respondents regarding its functionality and usability. While young doctors found no difficulty in adapting their workflow in the consultation room to work with the EHR, older doctors complained that it was difficult to use. Doctors in health centers and hospitals where SAECCOL has recently been deployed also complained, but they also indicated interest in receiving more training in order to master its use. The one issue physicians expressed was frustration with the need to classify their diagnoses and that it was not part of their training as physicians. They also agreed that Colima's IT department has made important efforts to address those difficulties, but that the issue is still not resolved.¹

Overall, our results suggest that designing and implementing EHRs is a gradual and slow process which requires attention to be given to technical, organizational, and behavioral factors.

Market Dynamics

Mexico has a growing urban middle class and is increasingly burdened by the highest rates of diabetes globally. Mexico is the second-most populated country in Latin America behind Brazil with a population of over 125 million and is primarily urban: 79% of the population lives in urban areas. Mexico's rapid urbanization coupled with increased population dispersion of rural communities compound challenges related to healthcare access for small isolated communities. Mexico also has a large indigenous population, approximately 10% of the total population, which is concentrated in the rural-poor areas in the central and southern regions of the country. In just one decade, from 2000 to 2010, Mexico's middle class grew by 17%, representing one of the fastest growing middle classes in Latin America. Poverty, however, continues to persist across the country, largely in rural areas.

Mexico has executed major health insurance reforms in the last ten years that have expanded coverage to the majority of the population. Mexicans with formal employment in the private sector are eligible for the Instituto Mexicano del Seguro Social (IMSS) healthcare program, which is funded by employees, and the federal government. Public sector employees have access to the Instituto de Seguridad y Servicios Sociales de los Trabajadores del Estado (ISSSTE) healthcare program. Approximately 40% of the Mexican population receives coverage from either the IMSS or the ISSSTE. Everyone not covered by other insurance schemes is eligible for Seguro Popular (Popular Insurance), a publicly subsidized health insurance program. Seguro Popular was created as part of the 2003 reform to legislate access to healthcare for lower-income families previously excluded from traditional social security schemes. By 2013, Seguro Popular enrollment hit 55.6 million. Seguro Popular provides coverage for a limited set of services, and individuals requiring specialty medications or consultations must pay out-of-pocket or go without.²

The demand for care exceeds supply at all levels, from primary to specialty care, with exacerbated gaps in rural settings. In 2011, Mexico had a national average of 2.1 physicians per 1,000 people, below other Latin American countries such as Uruguay and Argentina. Rural areas are even worse off. Mexico struggles with an underutilized general practitioner population, an issue that was reiterated by many times. Doctors often take jobs at pharmacy chains paying well below what would be expected for a newly practicing physician. There is a national opportunity to properly compensate and incentivize this workforce for increased care provision.

Government spending on healthcare in Mexico is low compared to other countries in Latin America and, despite recent insurance reforms, out-of-pocket spending in Mexico is still the fourth-highest among the 17 Latin American countries classified as upper-middle-income by the World Bank. In 2013, Mexico spent 6.2% of its GDP on health. Despite reforms and increased public investment in health, Mexico's per capita spending still remains below average.³

Public sector institutions are generally over-burdened and under-resourced. Users of public services also indicated an 18.2% cancellation rate of surgeries in 2004, mainly due to a lack of medical staff as well as surgery rooms. Issues like those mentioned above along with long wait times (both to schedule an appointment, as well as during the visit), and coverage gaps for specialty care drive users to seek care in the private sector, resulting in high out-of-pocket expenditures.

The stigma attached to public healthcare for low-income patients in Mexico, for example, can prevent private patients from going to the same clinic that also serves Seguro Popular patients, even if the quality and patient experience are highly rated. The private sector has its share of flaws too. Reimbursement structures can incentivize providers to over-treat and overprescribe, resulting in care that may not be aligned with the patient's interests. An analysis of the 2012 National Health and Nutrition Survey indicated a higher number of prescriptions being made in cases where the doctor was located adjacent to the pharmacy versus off-site.

Coordination is often missing in the public sector along with quality issues that arise around chronic disease management due to the absence of a comprehensive government strategy for addressing complex, chronic conditions. PreVita is working to improve management of chronic diseases such as cardiac disease, hypertension, obesity, and diabetes, by using technology to facilitate remote monitoring of chronic disease patients through telehealth. They provide physical care through affordable retail clinics located within Walmart stores and mobile medical units. PreVita created a population health management platform called E-healthtracker[®] that remotely monitors chronic disease patients and provides remote advice and guidance from health coaches. PreVita currently operates 86 retail clinics and provides more than 30,000 general consultations per month. PreVita is expanding its business, providing services to the government and other public institutions.

We identified three primary themes among innovative models reaching the low-income population in Mexico: chronic disease, healthcare financing, and technology-enabled services.

Constraints

Issues around quality healthcare regulation and little overlap among providers exist between public and private sector networks. This is worsened by the context of government health entities operating in silos, with multiple decision-makers for different parts of the care continuum, motivated by different incentives.

Our research in Mexico found that the majority of healthcare innovations are from the private sector. These innovators face a lack of growth capital: most financing options are sector extensive and lack health-specific expertise. For most investors, however, health is a relatively recent area of focus and most do not have deep expertise to effectively evaluate healthcare entrepreneurs, creating an uncertainty about how to enter the market. Many innovators cited a lack of grant funding and flexible capital as a primary challenge to growth. In particular, health is a sector of increasing interest for many investors in the Mexican market because of its potentially high financial returns and clear social value.

Other challenges in the ecosystem include public sector providers whom are also poorly incentivized to implement innovations for efficiency gains, as they are paid based on how long they have worked for the public healthcare system, not how well or efficiently they deliver services.²

Opportunities

Supportive ecosystem factors encompass a number of healthcare innovators in Mexico that are using technology to increase reach to patients in a more efficient manner via telemedicine and enhance access to provider information. An example is MedicalHome, a telemedicine model connecting patients throughout Mexico by phone with doctors in a Mexico City call center. Using standardized protocols, these doctors are able to resolve more than 60% of issues over the phone and avert unnecessary clinic and emergency department visits. MedicalHome is a subscription model, and users also receive access to a national network of clinics, labs, and hospitals at substantial discounts. The MedicalHome model provides a convenient, affordable option to access high-quality healthcare without the burden of scheduling, transportation, or wait times.

Innovations that span the value chain, addressing multiple health challenges in one solution, show promise but also face challenges in scaling up. Many of the innovators we observed were addressing more than one pain point in the health system, designing offerings that bundled financing, care, and technology. By structuring solutions in this way, innovators such as Salud Cercana simultaneously improve the functioning of multiple aspects of the healthcare delivery system.

Regional innovation hubs, such as in the state of Jalisco, show promise for the private sector to spur innovation, supported by government interest in potential public sector gains. Guadalajara, Jalisco's capital city, is Mexico's technology capital and a hot bed for certain types of healthcare innovation, including medical device and technology innovations. Although the target market for most of these companies is outside of Mexico, there is potential for Mexico to use this largely untapped homegrown capability.

There is a strong and growing supportive ecosystem for innovators in Mexico. Organizations like New Ventures, Angel Ventures, and Startup Mexico provide valuable support and networking opportunities for entrepreneurs and serve as pipeline partners for investors interested in funding innovations. These supportive ecosystem players, including accelerators, start-up funds, and other capacity building organizations, work across sectors in healthcare or health-related areas, driving an increase in focus on healthcare among supportive organizations.²

Citations

¹ Hernandez-Avila, Juan, et al. *Assessing the process of designing and implementing electronic health records: Mexico*. USA, 2012. Web. 19 May 2019. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3638180/>

² ManattJones Global Strategies. *Mexican Healthcare System Challenges and Opportunities*. 2015. Web. 19 May 2019. https://www.wilsoncenter.org/sites/default/files/mexican_healthcare_system_challenges_and_opportunities.pdf

³ Tafel, Rich. *Mexico's Businesses Cooperation: a Global Model for Health Care Innovation*. USA, 2011. Web. 19 May 2019. https://ssir.org/articles/entry/mexicos_businesses_cooperation_a_global_model_for_health_care_innovation

MEXICO

2019 EHR SURVEY RESPONSE RATES BY PRACTICE/ORGANIZATION TYPE, VALIDATED SYSTEM USERS 99 RESPONDENTS

2019 SURVEY RESPONDENT IDENTIFICATION	PERCENT OF TOTAL RESPONSES
Physician/Clinician Name	7%
Clinic/Practice Name	23%
Public Clinic	16%
Health System Clinic	24%
Academic Hospital and Medical Centers over 250 Beds	16%
Community Hospitals	7%
Small Hospitals under 100 Beds	0%
Ambulatory Surgery Centers	7%
TOTAL	100%

Source: Black Book™ 2019

2019 RESULTS

ELECTRONIC HEALTH RECORDS & PRACTICE TECHNOLOGY



HEALTH INFORMATION SYSTEMS

STOP LIGHT SCORING KEY

2019 TOP OVERALL AMBULATORY EHR EMR HIT VENDOR HONORS

MEXICO

HARMONI MD MEDWAVE

FUNCTIONAL SUBSET HONORS: TOP VENDORS FOR MEXICO

TOP VENDOR: PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING

HARMONI MD MEDWAVE

TOP VENDOR: INTEROPERABILITY, COMMUNICATIONS AND CONNECTIVITY

MV SOUL

TOP VENDOR: ORDER ENTRY AND MANAGEMENT

HARMONI MD MEDWAVE

TOP VENDOR: RESULTS REVIEW/MANAGEMENT AND DECISION SUPPORT

EVERIS

STOP LIGHT SCORING KEY

FIGURE 1: COMPREHENSIVE END-TO-END EMR VENDORS ARE DEFINED AS BEING COMPRISED OF FOUR SURVEYED FUNCTIONS

PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & INTEROPERABILITY, CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/MANAGEMENT
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Source: Black Book Research

FIGURE 2: KEY TO RAW SCORES

0.00 – 5.79 ▶	◀ 5.80 – 7.32 ▶	◀ 7.33 – 8.70 ▶	◀ 8.71 – 10.00
Deal breaking dissatisfaction	Neutral	Satisfactory performance	Overwhelming satisfaction
Does not meet expectations	Meets/does not meet expectations consistently	Meets expectations	Exceeds expectations
CANNOT RECOMMEND VENDOR	WOULD NOT LIKELY RECOMMEND VENDOR	RECOMMENDS VENDOR	HIGHLY RECOMMENDED VENDOR

Source: Black Book Research

STOP LIGHT SCORING KEY

FIGURE 3: COLOR-CODED STOP LIGHT DASHBOARD SCORING KEY	
Green 8.71 +	(Top 10%) scores better than 90% of EHR vendors. Green coded vendors have received constantly highest client satisfaction scores.
Clear	(Top 33%) scores better than 67% of EHR vendors. Well-scored vendor which have middle of the pack results.
Yellow 5.80 to 7.32	Scores better than half of EHR vendors. Cautionary performance scores, areas of improvement required.
Red Less than 5.79	Scores worse than 66% of EHR vendors. Poor performances reported potential cause for contract cancellations.

Source: Black Book Research

STOP LIGHT SCORING KEY

FIGURE 4: RAW SCORE COMPILATION AND SCALE OF REFERENCE

Black Book raw score scales

1 = Deal breaking dissatisfaction ◀ ▶ **10 = Exceeds all expectations**

Source: Black Book Research

Individual vendors can be examined by specific indicators on each of the main functions of EHR vendors as well as grouped and summarized subsets. Details of each subset are contained so that each vendor may be analyzed by function and end-to-end EHR services collectively.

STOP LIGHT SCORING KEY

FIGURE 5: SCORING KEY							
OVERALL RANK	Q1 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIO NS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
5	1	EHR NAME	8.49	8.63	8.50	8.01	8.66

Source: Black Book Research

- Overall rank** – this rank references the final position of all 18 criteria averaged by the mean score collectively. This vendor ranked fifth of the 20 competitors.
- Criteria rank** – refers to the number of the question or criteria surveyed. This is the sixth question of the 18 criteria of which this vendor ranked first of the 20 vendors analyzed positioned only on this particular criteria or question. Each vendor required ten unique client ballots validated to be included in the top ten ranks.
- Company** – name of the EHR vendor.
- Subsections** – each subset comprises one-fourth of the total EHR vendor mean at the end of this row and includes all buyers and users who indicate that they contract each respective EMR functional subsection with the supplier, specific to their physician enterprise.
- Mean** – congruent with the criteria rank, the mean is a calculation of all three subsets of EHR functions surveyed. As a final ranking reference, it includes all market sizes, specialties, delivery sites and geographies.

OVERALL KPI LEADERS

MEXICO

Summary of criteria outcomes

TABLE 1: SUMMARY OF CRITERIA OUTCOMES		
Total number one criteria ranks	Vendor	Overall rank
10	HARMONI MD MEDWAVE	1
5	MV SOUL	2
3	EVERIS	3

Source: Black Book Research

OVERALL KPI LEADERS: AMBULATORY EHR

MEXICO

Top score per individual criteria

TABLE 3: TOP SCORE PER INDIVIDUAL CRITERIA

Questions	Criteria	EHR Vendor	Overall
1	Strategic Alignment of Client Goals	HARMONI MD MEDWAVE	1
2	Innovation & Optimization	HARMONI MD MEDWAVE	1
3	Training	EVERIS	3
4	Client relationships and cultural fit	MV SOUL	2
5	Trust, Accountability, Transparency, Ethics	HARMONI MD MEDWAVE	1
6	Breadth of offerings, client types, delivery excellence	MVC SOUL	2
7	Deployment and outsourcing implementation	HARMONI MD MEDWAVE	1
8	Customization	EVERIS	3
9	Integration and interfaces	HARMONI MD MEDWAVE	1
10	Scalability, client adaptability, flexible pricing	EVERIS	3
11	Compensation and employee performance	HARMONI MD MEDWAVE	1
12	Reliability	MV SOUL	2
13	Brand image and marketing communications	MV SOUL	2
14	Marginal value adds and modules	HARMONI MD MEDWAVE	1
15	Financial & Managerial Viability	HARMONI MD MEDWAVE	1
16	Data security and backup services	MV SOUL	2
17	Support and customer care	HARMONI MD MEDWAVE	1
18	Best of breed technology and process improvement	HARMONI MD MEDWAVE	1

INDIVIDUAL EHR VENDOR KEY PERFORMANCE INDIVIDUAL EHR VENDOR KEY PERFORMANCE

KEY

A = 90% Agree
 B = 75% Agree
 C = 50% Agree
 D = 25% or Less Agree

RANK	EHR VENDOR MEXICO	DELIVERED ON EXPECTATIONS	IMPLEMENTATION ON TIME	TOTAL COST OF OWNERSHIP ON BUDGET
1	HARMONI MD MEDWAVE	A	B	B
2	MV SOUL	B	A	B
3	EVERIS	A	C	D
4	INTERSYSTEMS	C	B	B
5	PHILIPS	C	C	C
6	IBM	C	B	D
7	CERNER	D	C	D

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

MEXICO

Strategic Alignment of Vendor Offerings to Physician Practice Goals & Client's Mission

Table 5: Organizational structure meets the needs of stakeholders or customers and stakeholder satisfaction is the most important priority. EHR client is likely to recommend the vendor to similar sized physician groups, physicians within the same specialty or delivery setting.

OVERALL RANK	Q1 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	HARMONI MD MEDWAVE	9.65	9.49	9.83	9.83	9.70
3	2	EVERIS	9.53	9.80	9.55	8.24	9.28
2	3	MV SOUL	9.24	9.39	9.87	8.33	9.21

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

MEXICO

Innovation and Optimization

Table 6: Customers are also continuing to push the envelope for further enhancements to which the EHR vendor is responsive. EHR clients also believe that their vendors' technology is helping them manage practices more effectively, generate accurate records and reimbursement billings and cut their overhead in ways that were difficult or impossible to accomplish before electronic medical records were implemented. Vendor is responsive to make client recommendations with cutting edge improvements.

OVERALL RANK	Q2 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	HARMONI MD MEDWAVE	9.22	9.73	8.54	9.03	9.13
2	2	MV SOUL	9.41	9.24	7.10	7.82	8.38
3	3	EVERIS	8.42	8.78	6.90	8.05	8.04

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

MEXICO

Training

Table 7: Electronic medical and health record vendor leadership provides significant and meaningful training opportunities for internal employees and client staff. Leadership strives to develop technology staff, EMR/EHR client service and customer servicing consultant employees. Training modules are effective and practical so that minimal post-implementation training is required on or off site. Regular updates are timely and require minimal additional training to implement.

OVERALL RANK	Q3 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
3	1	EVERIS	8.01	8.83	9.59	8.04	8.62
2	2	MV SOUL	8.39	8.70	9.10	7.45	8.39
1	3	HARMONI MD MEDWAVE	8.39	8.22	8.49	8.09	8.30

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

MEXICO

Client relationships and cultural fit

Table 8: EHR vendor leadership honors customer relationships highly. The relationship with the EHR elevates the customer reputation. Improving physician practice and healthcare delivery efficiency and effectiveness is a priority of the supplier. Governance of engagement is neither complex for buyer nor does it require vendor management attention regularly. There is no regular transparency or quality issue. There are no culture clashes or misfits that threaten relationship's success or client's satisfaction.

OVERALL RANK	Q4 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
2	1	MV SOUL	9.53	9.15	9.62	9.40	9.43
1	2	HARMONI MD MEDWAVE	8.99	9.19	8.72	8.35	8.81
3	3	EVERIS	9.28	9.34	8.21	8.10	8.73

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

MEXICO

Trust, Accountability, Ethics and Transparency

Table 9: Trust in enterprise reputation is important to EHR clients as well as prospects. Client possesses an understanding that its EHR organization has the people, processes, and resources to effectively deliver the desired business and clinical results, based on its industry reputation and past performance. There are no disconnects between promises and delivery.

OVERALL RANK	Q5 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	HARMONI MD MEDWAVE	9.82	9.66	9.22	9.42	9.53
2	2	MV SOUL	8.79	8.72	7.79	9.24	8.64
3	3	EVERIS	8.09	8.98	7.48	9.61	8.54

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

MEXICO

Breadth of offerings, varied client settings, delivery excellence across all user types

Table 10: EMR/EHR vendor offers industry recognized horizontal functionality and vertical industry applications and manage bundled EMR services such as ePrescribing and developing new e-Health initiatives. Vendor routinely drives operational performance improvements and results in the areas they affect. Comprehensive offerings are constructed to meet the unique needs of the client’s EHR initiatives. Breadth of vendor modules offers comprehensive system services and broad modules.

OVERALL RANK	Q6 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
2	1	MV SOUL	9.28	9.83	9.42	9.44	9.49
1	2	HARMONI MD MEDWAVE	8.87	8.88	8.59	9.13	8.87
3	3	EVERIS	8.45	8.06	8.10	9.65	8.57

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

MEXICO

Deployment and EHR implementation

Table 11: EHR client deploys at a pace acceptable to the client. EHR solutions eliminate excessive supervision over vendor implementations. Vendor overcomes client implementation obstacles and challenges effectively. Technical, organizational and cultural implementation obstacles are handled professionally and punctually. EHR implementation time meets standard expectations. Implementations are efficient and sensitive to users' specific situations which may cause delays.

OVERALL RANK	Q7 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	HARMONI MD MEDWAVE	9.51	9.61	9.33	9.55	9.50
3	2	MV SOUL	8.64	8.75	7.84	8.42	8.41
2	3	EVERIS	8.88	8.51	8.64	6.91	8.24

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

MEXICO

Customization

Table 12: EHR products and process services are customized to meet the unique needs of specific practice client purpose, processes and physician models. Little resistance is encountered when changing performance measurements as clients' needs vary. Extraordinary efforts are made to adapt and convert client special needs into workable solutions with efficient cost and time considerations. EMR software allows for modifications that are not costly or complex.

OVERALL RANK	Q8 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
3	1	EVERIS	8.89	8.92	8.83	9.72	9.09
1	2	HARMONI MD MEDWAVE	9.22	9.33	8.91	8.22	8.92
2	3	MV SOUL	8.26	9.10	8.16	8.59	8.53

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

MEXICO

Integration and interfaces

Table 13: EHR vendor supports interfaces so information can be shared between necessary applications. Solutions are easily integrated to existing backend systems as needed and HIE feasible. Seamless interfaces to legacy applications are performed as required for optimal functioning. Human integration and interface activities are administered precisely. Systems communicate effectively among provider groups and ancillaries. True interoperability with other healthcare organizations is factored into implementation.

OVERALL RANK	Q9 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	HARMONI MD MEDWAVE	8.88	9.51	8.71	9.14	9.06
2	2	MV SOUL	9.17	9.15	8.75	9.10	9.04
3	3	EVERIS	8.73	8.86	7.66	8.40	8.41

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

MEXICO

Scalability, client adaptability, flexible pricing

Table 14: EHR services and solutions vendor provides flexible pricing allowing the client to choose and pay for the precise functionality and services needed. Vendor invests in significant infrastructure and has the ability to provide services to enterprise organizations. IT products and services meet the changing and varied needs of the EHR customer. Pricing is not rigid or shifting and meets needs of client.

OVERALL RANK	Q10 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
3	1	EVERIS	9.72	9.87	9.18	9.29	9.52
1	2	HARMONI MD MEDWAVE	9.32	9.37	8.37	9.77	9.21
2	3	MV SOUL	7.91	9.50	9.85	8.68	8.99

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

MEXICO

Vendor staff expertise, compensation and employee performance

Table 15: EHR vendor team of employees is considered top in industry for professionalism and skill. Vendor attracts and retains high performing staff. Vendor is focused on building and developing a strong employee team of producers. Employees act like owners/leaders. Company is moving towards leveraged pay at all levels. Vendor is using effective tools to tie performance metrics to compensation policy and compensating top leaders. Human resources-related criteria are scored from the client perspective on this indicator.

OVERALL RANK	Q11 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	HARMONI MD MEDWAVE	9.47	9.12	8.22	8.94	8.94
3	2	EVERIS	9.14	9.36	8.46	8.41	8.84
2	3	MV SOUL	8.93	9.09	8.28	8.02	8.58

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

MEXICO

Reliability

Table 16: EHR supplier meets agreed terms as evidenced by routine, acceptable service level reporting and industry expectations. Depth and breadth of applications/solutions are acceptable in meeting client needs. Online reliability meets expectations and outages/downtimes are minimized. Solid product and service capacities are demonstrated consistently. Service levels are consistently met as agreed. Services and support response is expedient and resources are appropriately provided by vendor team.

OVERALL RANK	Q12 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
2	1	MV SOUL	9.80	9.79	9.85	8.17	9.40
1	2	HARMONI MD MEDWAVE	9.68	9.38	8.92	9.58	9.39
3	3	EVERIS	9.05	8.86	6.90	9.77	8.65

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

MEXICO

Brand image and marketing communications

Table 17: EHR vendor’s marketing and sales statements/pitches are accurately and appropriately represented by actual EMR product and service deliverables. Image is consistent with top EHR rankings. Sales presentations and proposals are delivered upon and corporate integrity/honesty in marketing and business development are highly valued. Company image and integrity are values upheld top-down consistently. Elevated level of relevant client communications enhances the EHR vendor – EHR user relationship.

OVERALL RANK	Q13 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
2	1	MV SOUL	9.09	9.72	9.65	9.67	9.53
1	2	HARMONI MD MEDWAVE	9.33	9.88	9.05	9.64	9.48
3	3	EVERIS	9.04	9.05	8.63	9.46	9.05

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

MEXICO

Marginal value adds

Table 18: Beyond stimulus achievement, EHR vendors' cost savings are realized as generally estimated and not over-positioned or over/underestimated in ways that effect major client satisfaction or costs. Vendor offers value-adds as a practice management partner in cost savings and avoidance initiatives and creative programs through bundled EMR product design. Provides true business transformation opportunities to physician practices and other medical settings utilizing EHR.

OVERALL RANK	Q14 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	HARMONI MD MEDWAVE	9.71	9.64	9.43	9.66	9.61
3	2	EVERIS	8.36	7.26	9.54	8.58	8.44
2	3	MV SOUL	7.31	7.87	6.33	6.94	7.11

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

MEXICO

Viability and managerial stability

Table 19: Vendor’s viability, employee turnover, financial stability and/or cultural mismatches do not threaten relationship. Senior management and the board exemplify strong leadership principals to steward appropriate resources that impact EHR buyers. Client is confident of long term industry viability for this vendor based on investments, client adoption, exceptional outcomes and service levels. Field management is notably competent, stable and supportive of clients. EHR vendor demonstrates and provides evidence of competent fiscal management and leadership.

OVERALL RANK	Q15 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	HARMONI MD MEDWAVE	9.70	9.60	9.42	9.69	9.60
3	2	EVERIS	9.43	9.19	8.89	9.07	9.15
2	3	MV SOUL	9.30	9.64	9.67	7.99	9.15

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

MEXICO

Data security and backup services

Table 20: In order to provide secure and constantly dependable EMR service offerings for physician and hospital/IDN affiliate practices and entities, an EHR vendor has to provide the highest level of security and data back-up services. EHR vendor's service in these two areas is superior to the security and back-up system of past internal systems of the physician practice.

OVERALL RANK	Q16 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
2	1	MV SOUL	8.62	8.63	8.24	9.23	8.68
1	2	HARMONI MD MEDWAVE	9.26	8.99	7.66	8.00	8.48
3	3	EVERIS	8.14	8.91	7.94	8.05	8.26

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

MEXICO

Support and customer care

Table 21: Account management provides an adequate amount of onsite administration and support to clients. There exists a formal EHR account management program that meets client needs. Media and clients reference this vendor as an EMHR services leader and top vendor correctly. Customer services and relationship satisfaction is manifested through significant flagship clients as well as smaller and newest customers similarly. Vendor provides appropriate number of accessible support and customer care personnel.

OVERALL RANK	Q17 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	HARMONI MD MEDWAVE	9.16	9.59	9.43	9.34	9.40
3	2	EVERIS	9.92	9.14	9.12	9.06	9.31
2	3	MV SOUL	8.93	9.48	9.13	9.01	9.14

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

MEXICO

Best of breed technology and process improvement developments

Table 22: EHR management and related technology services are considered best of breed. EHR Vendor technology elevates customers via capabilities, equipment, processes, deliverables, professional staff, leadership, quality assurance and innovative initiatives. EHR services are delivered at or above current/former in-house service levels. Technology is current and relevant to exchanging health information among providers, as well as sufficiently offering patient access.

OVERALL RANK	Q18 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	HARMONI MD MEDWAVE	8.82	8.87	8.08	8.97	8.69
3	2	EVERIS	8.83	8.02	7.83	9.42	8.50
2	3	MV SOUL	8.01	8.07	6.41	6.67	7.29

Source: Black Book™ 2019



BLACK BOOK™
RESEARCH

South America

Brazil

EHR Status

We have identified many information technologies models, with most examples in this category designed to facilitate access to information and/or medical professionals. Theoretically, technology-based solutions have the potential to be highly scalable and cost effective, resulting in increased access for the patient.

During an examination, of the 4,772 invitations sent, 204 physicians responded to the questionnaire. Most used electronic medical record and prescription systems (92.6%), worked in private hospitals (43.1%), worked in general adult intensive care units (66.7%); most systems had been used for between 2 and 4 years (25.5%). Furthermore, the majority (84.6%) believed that the electronic system provided better quality than a paper system, and 76.7% believed that electronic systems provided greater safety than paper systems.¹

Electronic medical record systems seem to be widely used by the Brazilian intensive care physicians who responded to the questionnaire and, according to the data, seem to provide greater quality and safety than do paper records.

A systematic review notes that "despite the great impact of information and communication technologies on clinical practice and on the quality of health services, this trend has been almost exclusive to developed countries, whereas countries with poor resources suffer from many economic and social issues that have hindered the real benefits of electronic health (eHealth) tools."

The use of deficient systems and their misuse can cause errors that compromise the integrity of the information in EMRs, leading to situations that present potential dangers and that affect patient safety or reduce health care quality. These unintended consequences can also increase cases of fraud and abuse and have serious legal implications. Moreover, a wide range of ethical, legal and technical issues currently prevents systematic entry of data into EMRs and their use for clinical research purposes. In this regard, there is a tendency in the market towards system certification in which various aspects of safety and quality are evaluated.¹

Market Dynamics

Brazil has a transitioning economy with dissimilar geographic development and new incidence and control of disease challenges related to chronic conditions. Brazil is one of the five largest countries in the world, with a population of over 210 million people, over 85% of whom live in urban settings. Two significant changes in the population have increased the burden on an already- strained healthcare system. First, the proportion of people older than 60 years nearly doubled between 1960 and 2010. Second, noncontagious diseases, particularly cardiovascular diseases, have become the primary cause of all deaths in Brazil. Adding to the health system's challenge is Brazil's dramatic, unequal socioeconomic development. Although the free universal health program was established in 1990, stark regional disparities for accessing treatment and services persist, resulting in poorer health outcomes for certain regions of the country. For example, infant mortality in 2007 was 2.2 times greater in the north of the country than in the south.²

The government plays an enormous role in healthcare delivery, payment, and regulation in Brazil, with the private sector playing a strong supplementary role. The 1990 creation of Brazil's publicly-funded Unified Health System, or Sistema Único de Saúde (SUS), decentralized Brazil's former healthcare system. As a result, healthcare delivery and financing responsibilities shifted to the state and municipal level, with municipalities responsible for management

and provision of primary care services, and states helping to set policy goals and provide both technical and financial assistance. Prior to the creation of the SUS, half of Brazilians had no health insurance coverage. Two decades later, more than 75% of the population depends exclusively on the SUS for health insurance. Similar to Mexico, however, insurance coverage does not always lead to true access. Many citizens covered by the SUS still face significant access issues for a variety of reasons. One reason is the challenges in healthcare worker retention across municipalities due to variance in wage structures. Another is long wait times for appointments, surgeries, and certain medications. As a result, many Brazilians choose to seek care in the private sector to avoid delays and administrative frustrations. Private health insurance is only affordable for about a quarter of the population creating access disparities between the wealthy, who can and do use the private sector, and the poor, who typically cannot. The government and employers offer individuals the option to purchase supplemental healthcare through private providers.

Brazil's decentralized political system gives significant autonomy to states and municipalities, which is reflected in healthcare financing, delivery, and regulation. This decentralized model of care delivery is designed to promote care that is more responsive to regional needs; however, poor communication and resource management between federal, state, and municipal entities introduce bottlenecks that weaken the efficiency of the model. Administrative challenges are amplified by tensions between the public and private sector, particularly with regard to the provision of high-complexity services, management of referral systems, and reimbursement.

While healthcare coverage through the SUS in Brazil is universal (with the new constitution framing it as a fundamental right of the population), access to care still lags considerably. The increased access is due in part to Brazil's reinforcement of their primary care system, through the creation of programs such as the Family Health Strategy, which have increased healthcare utilization in low-income states and helped to reduce geographic disparities in utilization. Despite these improvements, however, at 1.9 physicians per 1,000 people, Brazil's ratio of doctors to the population is lower than other Latin American countries such as Argentina and Mexico, with the majority of physicians concentrated in the southeast region. In 2009, about 52% of physicians practiced in the southeast compared to only about 8% in the north.²

The large divide between public and private sectors in healthcare result in many challenges for patients and the business sector alike. Reciprocal knowledge is lacking between the two sectors, neither sector had significant work experience in or networks with the other sector. This disconnect is partly due to the fact that there are few formal mechanisms for collaboration between the sectors. This also results in challenges for care coordination for patients between public and private providers, with many reports of poor referral handoffs. Association between the two was needed, for instance, in 2016 when the unemployment rate rose significantly, thus more citizens moved into the public healthcare system.

Government providers are reportedly trying to think more systematically about innovation. Technology innovation receives more attention than process or business model innovation, particularly in the public sector. Some large private hospitals are starting to consider patient flow and other process-related issues, though these initiatives appear to be in the emerging stages, with a handful of leading-edge organizations like Albert Einstein Hospital standing out as early adopters. We found almost no examples of government providers adopting business model and/or process innovations. Innovation adoption in the public sector was focused almost exclusively on technological innovations.³

Constraints

In order to ease patients' worry regarding their personal use of information new legislation about privacy needs to be deployed, similar to HIPPA compliance in US. In August 14, 2018, Brazil approved the General Data Protection Law. This creates a new legal framework for the use of personal data in Brazil, both online and offline, in the private and public sectors. The result of a broad discussion aims not only to guarantee individual rights, but also to foster economic, technological and innovation development through clear, transparent and comprehensive rules for the adequate use of personal data. The law has yet to come into effect; it is expected to be enforced from August 2020.⁴

Moreover, interoperability stalls technology due to varying health systems within a large population.³ Telecommunication infrastructure must be built or updated to get in touch with physicians who do not want to travel to rural places because they are so far away from their place of work. Lastly, the scarcity of process innovation is due in part to the lack of labor flexibility, which limits implementation of task-shifting models. Similar to Colombia, many interviewees shared that existing laws and politically powerful unions make it difficult to implement healthcare innovations that involve task shifting between healthcare roles. For innovators, partnering with the public sector is made difficult by long repayment timelines, blurred payment processes, and corruption. Additionally, the government is notorious for slow repayment on existing contracts, a problem only intensified by Brazil's struggling economy.

Opportunities

There is clear opportunity for new models that facilitate access to both health information and medical professionals and help patients navigate the system. Additionally, the regulatory environment for telemedicine and mobile health (mHealth) is murky. In some cases, the existing regulations for telemedicine are sufficiently vague that companies operate in a gray area of legality. Consultation apps are largely illegal under current regulations but, in rare cases, companies have found ways to offer these within the regulatory scope. In other cases, the relevant government regulatory bodies have not come to consensus about which body should regulate in a given area. Interviewees reported that doctors are generally in agreement about using technologies that enhance doctor-to-doctor communication (e.g. sharing X-ray images between primary care doctors and specialists) but are more resistant to adopt doctor-to-patient models (e.g. providing medical consultation over video conferencing or through smart phone apps).

Furthermore, opportunities lie if vendors largely focus on the fragmented relationships between the public and private sectors. New models that leverage the strengths of both sectors toward common goals have the potential to transform the experience of healthcare delivery for Brazil's population. Private sector innovators balance public sector collaborations with other scaling strategies to maintain sustainability in the face of public-private partnership challenges. Given the previously described challenges of working with the government, a number of organizations who do partner with the government also explicitly build direct-to-consumer or business-to-business strategies. This protects them from the risks to cash flow and financial sustainability that come with dependency on the government. Namely, ProRadis, which offers a set of software solutions that improve clinic efficiency and is designed to drive down costs and improve quality. These solutions include clinic management tools (e.g. scheduling, electronic health records, and enterprise resource planning), telemedicine features (e.g. generating reports, sharing images), and clinic capacity optimization features (e.g. ability to see capacity and demand distribution across MRI and other imaging machines). ProRadis's primary scaling strategy is through sales to public providers, but they are complementing this with a direct-to-consumer line currently in the early stages of testing.²

Citations

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³ Lofstrom, Joyce. *HIMSS Latin America Launches*. Brazil, 2014. Web. 15 May 2019. <https://www.himss.org/news/himss-latin-america-launches>

⁴ Monteiro, Renato L. *The new Brazilian General Data Protection Law*. Brazil, 2018. Web. 15 May 2019. <https://iapp.org/news/a/the-new-brazilian-general-data-protection-law-a-detailed-analysis/>

BRAZIL

2019 EHR SURVEY RESPONSE RATES BY PRACTICE/ORGANIZATION TYPE, VALIDATED SYSTEM USERS 256 RESPONDENTS

2019 SURVEY RESPONDENT IDENTIFICATION	PERCENT OF TOTAL RESPONSES
Physician/Clinician Name	10%
Clinic/Practice Name	23%
Public Clinic	19%
Health System Clinic	14%
Academic Hospital and Medical Centers over 250 Beds	29%
Community Hospitals	5%
Small Hospitals under 100 Beds	0%
Ambulatory Surgery Centers	0%
TOTAL	100%

Source: Black Book™ 2019

2019 RESULTS

ELECTRONIC HEALTH RECORDS & PRACTICE TECHNOLOGY



HEALTH INFORMATION SYSTEMS

STOP LIGHT SCORING KEY

2019 TOP OVERALL AMBULATORY EHR EMR HIT VENDOR HONORS

BRAZIL

EVERIS

FUNCTIONAL SUBSET HONORS: TOP VENDORS FOR BRAZIL

TOP VENDOR: PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING

EVERIS

TOP VENDOR: INTEROPERABILITY, COMMUNICATIONS AND CONNECTIVITY

EVERIS

TOP VENDOR: ORDER ENTRY AND MANAGEMENT

PHILIPS

TOP VENDOR: RESULTS REVIEW/MANAGEMENT AND DECISION SUPPORT

INTERSYSTEMS

STOP LIGHT SCORING KEY

FIGURE 1: COMPREHENSIVE END-TO-END EMR VENDORS ARE DEFINED AS BEING COMPRISED OF FOUR SURVEYED FUNCTIONS

PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & INTEROPERABILITY, CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/MANAGEMENT
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Source: Black Book Research

FIGURE 2: KEY TO RAW SCORES

0.00 – 5.79 ▶	◀ 5.80 – 7.32 ▶	◀ 7.33 – 8.70 ▶	◀ 8.71 – 10.00
Deal breaking dissatisfaction	Neutral	Satisfactory performance	Overwhelming satisfaction
Does not meet expectations	Meets/does not meet expectations consistently	Meets expectations	Exceeds expectations
CANNOT RECOMMEND VENDOR	WOULD NOT LIKELY RECOMMEND VENDOR	RECOMMENDS VENDOR	HIGHLY RECOMMENDED VENDOR

Source: Black Book Research

STOP LIGHT SCORING KEY

FIGURE 3: COLOR-CODED STOP LIGHT DASHBOARD SCORING KEY	
Green 8.71 +	(Top 10%) scores better than 90% of EHR vendors. Green coded vendors have received constantly highest client satisfaction scores.
Clear	(Top 33%) scores better than 67% of EHR vendors. Well-scored vendor which have middle of the pack results.
Yellow 5.80 to 7.32	Scores better than half of EHR vendors. Cautionary performance scores, areas of improvement required.
Red Less than 5.79	Scores worse than 66% of EHR vendors. Poor performances reported potential cause for contract cancellations.

Source: Black Book Research

STOP LIGHT SCORING KEY

FIGURE 4: RAW SCORE COMPILATION AND SCALE OF REFERENCE

Black Book raw score scales

1 = Deal breaking dissatisfaction ◀ ▶ **10 = Exceeds all expectations**

Source: Black Book Research

Individual vendors can be examined by specific indicators on each of the main functions of EHR vendors as well as grouped and summarized subsets. Details of each subset are contained so that each vendor may be analyzed by function and end-to-end EHR services collectively.

STOP LIGHT SCORING KEY

FIGURE 5: SCORING KEY							
OVERALL RANK	Q1 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
5	1	EHR NAME	8.49	8.63	8.50	8.01	8.66

Source: Black Book Research

- Overall rank** – this rank references the final position of all 18 criteria averaged by the mean score collectively. This vendor ranked fifth of the 20 competitors.
- Criteria rank** – refers to the number of the question or criteria surveyed. This is the sixth question of the 18 criteria of which this vendor ranked first of the 20 vendors analyzed positioned only on this particular criteria or question. Each vendor required ten unique client ballots validated to be included in the top ten ranks.
- Company** – name of the EHR vendor.
- Subsections** – each subset comprises one-fourth of the total EHR vendor mean at the end of this row and includes all buyers and users who indicate that they contract each respective EMR functional subsection with the supplier, specific to their physician enterprise.
- Mean** – congruent with the criteria rank, the mean is a calculation of all three subsets of EHR functions surveyed. As a final ranking reference, it includes all market sizes, specialties, delivery sites and geographies.

OVERALL KPI LEADERS

BRAZIL

Summary of criteria outcomes

TABLE 1: SUMMARY OF CRITERIA OUTCOMES		
Total number one criteria ranks	Vendor	Overall rank
8	EVERIS	1
3	INTERSYSTEMS	2
7	PHILIPS	3

Source: Black Book Research

OVERALL KPI LEADERS: AMBULATORY EHR

BRAZIL

Top score per individual criteria

TABLE 2: TOP SCORE PER INDIVIDUAL CRITERIA			
Questi ons	Criteria	EHR Vendor	Ov era ll
1	Strategic Alignment of Client Goals	EVERIS	1
2	Innovation & Optimization	INTERSYSTEMS	2
3	Training	PHILIPS	3
4	Client relationships and cultural fit	EVERIS	1
5	Trust, Accountability, Transparency, Ethics	PHILIPS	2
6	Breadth of offerings, client types, delivery excellence	PHILIPS	2
7	Deployment and outsourcing implementation	EVERIS	1
8	Customization	EVERIS	1
9	Integration and interfaces	INTERSYSTEMS	3
10	Scalability, client adaptability, flexible pricing	INTERSYSTEMS	3
11	Compensation and employee performance	EVERIS	1
12	Reliability	EVERIS	1
13	Brand image and marketing communications	INTERSYSTEMS	3
14	Marginal value adds and modules	INTERSYSTEMS	3
15	Financial & Managerial Viability	INTERSYSTEMS	3
16	Data security and backup services	EVERIS	1
17	Support and customer care	INTERSYSTEMS	3
18	Best of breed technology and process improvement	EVERIS	1

INDIVIDUAL EHR VENDOR KEY PERFORMANCE INDIVIDUAL EHR VENDOR KEY PERFORMANCE

KEY

A = 90% Agree
 B = 75% Agree
 C = 50% Agree
 D = 25% or Less Agree

RANK	EHR VENDOR BRAZIL	DELIVERED ON EXPECTATIONS	IMPLEMENTATION ON TIME	TOTAL COST OF OWNERSHIP ON BUDGET
1	EVERIS	B	A	B
2	INTERSYSTEMS	B	B	B
3	PHILIPS	A	B	C

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

BRAZIL

Strategic Alignment of Vendor Offerings to Physician Practice Goals & Client's Mission

Table 5: Organizational structure meets the needs of stakeholders or customers and stakeholder satisfaction is the most important priority. EHR client is likely to recommend the vendor to similar sized physician groups, physicians within the same specialty or delivery setting.

OVERALL RANK	Q1 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	EVERIS	9.40	9.71	9.24	9.12	9.37
3	2	PHILIPS	9.01	8.60	8.96	9.79	9.09
2	3	INTERSYSTEMS	9.06	8.87	9.72	8.18	8.96

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

BRAZIL

Innovation and Optimization

Table 6: Customers are also continuing to push the envelope for further enhancements to which the EHR vendor is responsive. EHR clients also believe that their vendors' technology is helping them manage practices more effectively, generate accurate records and reimbursement billings and cut their overhead in ways that were difficult or impossible to accomplish before electronic medical records were implemented. Vendor is responsive to make client recommendations with cutting edge improvements.

OVERALL RANK	Q2 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
2	1	INTERSYSTEMS	9.51	9.89	9.79	9.33	9.63
1	2	EVERIS	9.42	9.66	8.99	8.82	9.35
3	3	PHILIPS	8.88	9.18	8.13	9.14	8.83

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

BRAZIL

Training

Table 7: Electronic medical and health record vendor leadership provides significant and meaningful training opportunities for internal employees and client staff. Leadership strives to develop technology staff, EMR/EHR client service and customer servicing consultant employees. Training modules are effective and practical so that minimal post-implementation training is required on or off site. Regular updates are timely and require minimal additional training to implement.

OVERALL RANK	Q3 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
3	1	PHILIPS	9.26	8.63	8.00	9.33	8.81
2	2	INTERSYSTEMS	8.80	9.32	7.86	9.07	8.76
1	3	EVERIS	9.01	8.96	7.69	8.37	8.51

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

BRAZIL

Client relationships and cultural fit

Table 8: EHR vendor leadership honors customer relationships highly. The relationship with the EHR elevates the customer reputation. Improving physician practice and healthcare delivery efficiency and effectiveness is a priority of the supplier. Governance of engagement is neither complex for buyer nor does it require vendor management attention regularly. There is no regular transparency or quality issue. There are no culture clashes or misfits that threaten relationship's success or client's satisfaction.

OVERALL RANK	Q4 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	EVERIS	9.89	9.98	9.40	9.99	9.81
2	2	INTERSYSTEMS	9.37	9.44	9.88	9.80	9.62
3	3	PHILIPS	8.25	8.97	8.24	8.15	8.70

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

BRAZIL

Trust, Accountability, Ethics and Transparency

Table 9: Trust in enterprise reputation is important to EHR clients as well as prospects. Client possesses an understanding that its EHR organization has the people, processes, and resources to effectively deliver the desired business and clinical results, based on its industry reputation and past performance. There are no disconnects between promises and delivery.

OVERALL RANK	Q5 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
2	1	INTERSYSTEMS	9.40	9.64	9.55	9.47	9.52
1	2	EVERIS	9.28	9.21	9.64	9.69	9.46
3	3	PHILIPS	8.03	8.00	8.24	8.11	8.10

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

BRAZIL

Breadth of offerings, varied client settings, delivery excellence across all user types

Table 10: EMR/EHR vendor offers industry recognized horizontal functionality and vertical industry applications and manage bundled EMR services such as ePrescribing and developing new e-Health initiatives. Vendor routinely drives operational performance improvements and results in the areas they affect. Comprehensive offerings are constructed to meet the unique needs of the client’s EHR initiatives. Breadth of vendor modules offers comprehensive system services and broad modules.

OVERALL RANK	Q6 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
2	1	INTERSYSTEMS	8.94	9.46	9.12	9.15	9.17
1	2	EVERIS	9.22	8.44	8.96	9.29	8.98
3	3	PHILIPS	8.30	9.08	8.45	8.31	8.54

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

BRAZIL

Deployment and EHR implementation

Table 11: EHR client deploys at a pace acceptable to the client. EHR solutions eliminate excessive supervision over vendor implementations. Vendor overcomes client implementation obstacles and challenges effectively. Technical, organizational and cultural implementation obstacles are handled professionally and punctually. EHR implementation time meets standard expectations. Implementations are efficient and sensitive to users' specific situations which may cause delays.

OVERALL RANK	Q7 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	EVERIS	9.73	9.45	9.47	9.69	9.59
2	2	INTERSYSTEMS	9.05	9.50	9.65	9.56	9.44
3	3	PHILIPS	9.11	9.17	9.32	9.36	9.24

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

BRAZIL

Customization

Table 12: EHR products and process services are customized to meet the unique needs of specific practice client purpose, processes and physician models. Little resistance is encountered when changing performance measurements as clients' needs vary. Extraordinary efforts are made to adapt and convert client special needs into workable solutions with efficient cost and time considerations. EMR software allows for modifications that are not costly or complex.

OVERALL RANK	Q8 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	EVERIS	9.44	9.34	9.08	9.01	9.22
3	2	PHILIPS	9.00	8.87	8.73	9.15	8.94
2	3	INTERSYSTEMS	8.89	7.99	7.66	8.50	8.26

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

BRAZIL

Integration and interfaces

Table 13: EHR vendor supports interfaces so information can be shared between necessary applications. Solutions are easily integrated to existing backend systems as needed and HIE feasible. Seamless interfaces to legacy applications are performed as required for optimal functioning. Human integration and interface activities are administered precisely. Systems communicate effectively among provider groups and ancillaries. True interoperability with other healthcare organizations is factored into implementation.

OVERALL RANK	Q9 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
3	1	PHILIPS	9.44	9.30	9.46	9.28	9.37
1	2	EVERIS	9.51	8.96	8.92	9.47	9.21
2	3	INTERSYSTEMS	9.26	9.57	8.94	9.00	9.19

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

BRAZIL

Scalability, client adaptability, flexible pricing

Table 14: EHR services and solutions vendor provides flexible pricing allowing the client to choose and pay for the precise functionality and services needed. Vendor invests in significant infrastructure and has the ability to provide services to enterprise organizations. IT products and services meet the changing and varied needs of the EHR customer. Pricing is not rigid or shifting and meets needs of client.

OVERALL RANK	Q10 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
3	1	PHILIPS	9.11	8.84	8.49	8.77	8.80
1	2	EVERIS	8.85	9.05	8.23	8.44	8.64
2	3	INTERSYSTEMS	8.29	8.19	8.10	8.01	8.15

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

BRAZIL

Vendor staff expertise, compensation and employee performance

Table 15: EHR vendor team of employees is considered top in industry for professionalism and skill. Vendor attracts and retains high performing staff. Vendor is focused on building and developing a strong employee team of producers. Employees act like owners/leaders. Company is moving towards leveraged pay at all levels. Vendor is using effective tools to tie performance metrics to compensation policy and compensating top leaders. Human resources-related criteria are scored from the client perspective on this indicator.

OVERALL RANK	Q11 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	EVERIS	9.30	9.26	8.97	9.61	9.29
3	2	PHILIPS	9.25	9.22	9.07	9.00	9.13
2	3	INTERSYSTEMS	8.96	9.08	8.91	8.85	8.95

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

BRAZIL

Reliability

Table 16: EHR supplier meets agreed terms as evidenced by routine, acceptable service level reporting and industry expectations. Depth and breadth of applications/solutions are acceptable in meeting client needs. Online reliability meets expectations and outages/downtimes are minimized. Solid product and service capacities are demonstrated consistently. Service levels are consistently met as agreed. Services and support response is expedient and resources are appropriately provided by vendor team.

OVERALL RANK	Q12 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	EVERIS	9.28	9.49	9.37	8.97	9.28
2	2	INTERSYSTEMS	9.38	9.14	9.38	9.02	9.23
3	3	PHILIPS	9.25	9.35	8.62	8.94	9.04

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

BRAZIL

Brand image and marketing communications

Table 17: EHR vendor’s marketing and sales statements/pitches are accurately and appropriately represented by actual EMR product and service deliverables. Image is consistent with top EHR rankings. Sales presentations and proposals are delivered upon and corporate integrity/honesty in marketing and business development are highly valued. Company image and integrity are values upheld top-down consistently. Elevated level of relevant client communications enhances the EHR vendor – EHR user relationship.

OVERALL RANK	Q13 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
3	1	PHILIPS	9.63	8.87	7.96	8.78	8.81
1	2	EVERIS	8.62	8.26	7.78	8.67	8.33
2	3	INTERSYSTEMS	8.73	8.47	8.16	7.43	8.20

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

BRAZIL

Marginal value adds

Table 18: Beyond stimulus achievement, EHR vendors' cost savings are realized as generally estimated and not over-positioned or over/underestimated in ways that effect major client satisfaction or costs. Vendor offers value-adds as a practice management partner in cost savings and avoidance initiatives and creative programs through bundled EMR product design. Provides true business transformation opportunities to physician practices and other medical settings utilizing EHR.

OVERALL RANK	Q14 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
3	1	PHILIPS	9.48	9.39	9.48	9.56	9.48
2	2	INTERSYSTEMS	9.35	9.23	9.10	9.04	9.18
1	3	EVERIS	9.32	9.23	9.31	8.63	9.12

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

BRAZIL

Viability and managerial stability

Table 19: Vendor’s viability, employee turnover, financial stability and/or cultural mismatches do not threaten relationship. Senior management and the board exemplify strong leadership principals to steward appropriate resources that impact EHR buyers. Client is confident of long term industry viability for this vendor based on investments, client adoption, exceptional outcomes and service levels. Field management is notably competent, stable and supportive of clients. EHR vendor demonstrates and provides evidence of competent fiscal management and leadership.

OVERALL RANK	Q15 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
3	1	PHILIPS	9.13	8.77	8.06	8.72	8.67
2	2	INTERSYSTEMS	8.89	8.36	8.01	8.87	8.53
1	3	EVERIS	8.51	8.57	8.26	8.11	8.36

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

BRAZIL

Data security and backup services

Table 20: In order to provide secure and constantly dependable EMR service offerings for physician and hospital/IDN affiliate practices and entities, an EHR vendor has to provide the highest level of security and data back-up services. EHR vendor's service in these two areas is superior to the security and back-up system of past internal systems of the physician practice.

OVERALL RANK	Q16 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	EVERIS	9.09	9.44	9.41	9.46	9.35
2	2	INTERSYSTEMS	9.09	9.54	8.51	9.57	9.18
3	3	PHILIPS	8.96	9.10	8.61	9.05	8.93

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

BRAZIL

Support and customer care

Table 21: Account management provides an adequate amount of onsite administration and support to clients. There exists a formal EHR account management program that meets client needs. Media and clients reference this vendor as an EMHR services leader and top vendor correctly. Customer services and relationship satisfaction is manifested through significant flagship clients as well as smaller and newest customers similarly. Vendor provides appropriate number of accessible support and customer care personnel.

OVERALL RANK	Q17 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
3	1	PHILIPS	9.50	9.52	9.69	9.83	9.64
2	2	INTERSYSTEMS	9.58	9.61	9.13	9.41	9.43
1	3	EVERIS	9.47	9.48	9.16	9.47	9.40

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

BRAZIL

Best of breed technology and process improvement developments

Table 22: EHR management and related technology services are considered best of breed. EHR Vendor technology elevates customers via capabilities, equipment, processes, deliverables, professional staff, leadership, quality assurance and innovative initiatives. EHR services are delivered at or above current/former in-house service levels. Technology is current and relevant to exchanging health information among providers, as well as sufficiently offering patient access.

OVERALL RANK	Q18 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	EVERIS	8.82	9.65	8.86	9.26	9.15
3	2	PHILIPS	8.68	8.65	8.91	9.49	8.93
2	3	INTERSYSTEMS	9.02	8.28	9.13	8.12	8.64

Source: Black Book™ 2019

Colombia

EHR Status

One of Colombia's system's biggest weaknesses is limited coordination across care levels. PACS technology has been in use and in existence for more than 20 years and was revolutionary when it began to solve specific and departmental problems. Almost all PACS use patented technologies that are not open to interoperability or the ability to freely share or consolidate between systems or departments. With the passage of time, and the growth in the practice of diagnostic images, we find the need to find options to interoperate between the PACS and even with other departments in which the images, videos, or other formats are not generated in a certain format, and that, therefore, are not part of the PACS strategy.

An additional problem that arises is the limited transfer of clinical information, mainly between primary and specialist outpatient care. Informants report that insufficient information is recorded in referral and counter-referral forms and shared clinical records. This hinders the primary care doctors' follow-up of patients as they do not have access to the final diagnosis and treatment. It can also lead to the specialist restarting the diagnostic procedure, thus duplicating tests and delaying treatment. There are other things that are left unclear; if the specialist was to try for two or three months to see whether it went well or not, or if they were going to keep increasing the dose or reducing it gradually. Maintaining this level of ambiguity leaves the next physician/clinician feeling a bit lost.

In response to the challenge of achieving coordination of healthcare, international agencies and governments in Latin America, including those of Colombia, have promoted the introduction of integrated healthcare networks (IHN), despite the scarce evidence of their impact. IHNs are defined as a network of organizations that provides or arranges to provide a coordinated continuum of services to a defined population and is willing to be held clinically and fiscally accountable for the health status and outcomes of the population served. Theoretically, the integration of healthcare delivery contributes to more efficient, equitable and higher quality health services through an intermediate goal: the improvement of care coordination. Care coordination should help to avoid wasteful duplication of diagnostic testing, perilous polypharmacy, inappropriate referrals, and conflicting care plans; thus, the effects of care coordination extend beyond cost reduction to improving quality of care.¹

Market Dynamics

Colombia has a transitioning economy, increasing rates of non-communicable diseases (NCDs), and disparate geographic development. With a population of over 49 million people, 24% of the Colombian population lives in rural areas while the majority live in or near urban areas. This unequal population distribution has led to disparate rates of development, including in the healthcare sector, with rural areas showing the least improvement in the human development index over the last 14 years.²

At the same time, Colombia faces an extremely unequal distribution of wealth, with half of the population receiving less than 15% of the total income in the country. The majority of the population lives below the poverty line and 17% of the population lives below the extreme poverty line. These geographic and wealth disparities propel disparities in access to quality healthcare between income levels and between rural and urban settings. Despite insurance coverage, many citizens still face significant access issues for a variety of reasons that are well covered in the literature, including long wait times for appointments; trouble accessing providers due to insurance authorization issues, leading to greater out-of-pocket costs; and increased informal care use, such as self-medication

and using pharmacists as primary points of contact. This country is home to 20 of the 42 best hospitals in Latin America and most urban areas feature advanced facilities and well-trained providers. However, patients in Colombia generally have limited choice when it comes to providers, considering they can only select a primary care provider within their designated network.

To alleviate healthcare disparities, the Colombian government ratified a landmark reform in 1993 (Law 100) to establish universal healthcare coverage, stipulating that all citizens are entitled to a comprehensive benefits package regardless of ability to pay. Cost is not considered a barrier for the majority of Colombians in accessing healthcare because most services are covered in part or full by public insurance. Rather, cost challenges have largely moved from individuals to the government.

The health system of the country is known as General System of Social Security in Health (SGSSS) which is made up of two insurance schemes. Their health system includes both an employment-based scheme (which we refer to as CR for contributory regime) and a subsidized scheme (which we refer to as SR for subsidized regime). The percentage of total population enrolled in CR is 47.4% which are formally employed workers who have a predetermined income threshold. The contributory regime is financed by contributions from employers and employees with a 12.5% payroll tax. On the contrary, the percentage of total population enrolled in SR is 39.9%, they are low-income individuals identified through the Selection System of Beneficiaries for Social Programs (SISBEN) and financed by taxes.²

Colombia's e-health technology has helped connect patients in remote locations with healthcare specialists. Half of Colombia's population, or about 24 million people, still live in towns with less than 10,000 inhabitants. Platforms such as Medellin-based, X-rol Telemedicine, help local insurers and healthcare providers reduce the cost of having specialists treat patients suffering from high-cost diseases in remote areas, said Mejia.

However, in 2014 only 3.5 million patients in Colombia were cared for through e-health platforms, according to a study by the country's Ministry of Information and Communications Technology. The study also found that only about half of the country's healthcare providers have access to the internet and of those, only 48% have a cable or fiber-optic connection.³

Colombia's e-health sector is also stifled by the lack of interoperability between providers. An electronic medical record compiled by one company, for instance, cannot always be accessed by another provider.

Consequently, the best chance for the sector to grow is for individual providers to expand their reach as most hospitals and clinics rely on third-party providers like X-rol Telemedicine to offer e-health services.³

Constraints

The recent development of a regulatory framework for telemedicine has created new potential, but misaligned incentives prevent expansion of this mechanism. Expansion of telemedicine models would overcome distance barriers in rural communities. Challenges such as cultural barriers, are impeding greater uptake. Lack of experience amongst providers, leading to misunderstandings of where and how telemedicine could be deployed, even in cases where there is a sufficient budget for implementing new technologies. Ongoing challenges for telemedicine expansion include helping doctors, medical associations, political figures, and others key actors to better understand how to implement telemedicine most effectively, both technologically and within the current regulatory environment.⁴

A great deal of variability exists among this territory in regard to the importance of innovation. Our analysis of this context in Colombia suggests that several ecosystem factors impact the types and potential success of emerging innovative models.

First, there is a general lack of public trust and overall frustration with the healthcare system. The negative perception insurers charged with enrolling individuals into a plan and contracting with health service providers to deliver care has been fueled by high-profile corruption cases and long wait times for care.

Second, misaligned incentives to invest in innovation also impact the potential of emerging healthcare models. Public hospitals are less likely than private hospitals to engage in innovation activities; and within the private sector there is wide variation in degree of transformation. Public institutions seek to keep cost low while private organizations link with universities. However, these activities are generally research-focused with little to no commercialization or path to market.

Third, existing regulations hamper labor flexibility and ability to implement task-shifting models. In many countries around the world task-shifting approaches have helped to cut costs, address workforce shortages, and increase efficiencies in care delivery. However, despite the recognized gap in human resources for health in Colombia, particularly in rural areas, current regulations limit the adoption of this approach. For example, interviewees noted that it is illegal for any provider other than an obstetrician/gynecologist to conduct an ultrasound of a pregnant woman. While many of these laws were originally intended to maintain clinical excellence, the current regulations are often maintained by entrenched special interest groups despite global evidence that other less-expensive providers can perform these same tasks with the same level of quality.

Fourth, there is a lack of risk capital to support healthcare entrepreneurs; most financing options lack health-specific expertise. Typical funding options for Colombian health entrepreneurs include banks, venture capitalists, government and public entities, and angel investors. Nevertheless, as seen in our research throughout Latin America, the funders that provide these types of capital are investing in multiple sectors, and few, if any, have deep competence in healthcare. The scarce health-specific expertise, combined with uncertainty around regulatory change, has caused many investors to shy away from health investments.⁴

Opportunities

A growing emphasis on innovation and entrepreneurship within universities is spurring the development of new technologies across sectors, including healthcare. However, many of these programs are still in early stages. These programs tend to be more focused on new technologies, rather than business model or process innovations for healthcare. The Asociación Nacional de Empresarios de Colombia (ANDI), a leading national business association in Colombia that works across many sectors, hired staff in early 2014 to focus exclusively on innovation programming and support. Large multinational companies such as GSK and Sanofi are increasingly emphasizing healthcare innovation as a part of their strategy, both by restructuring existing roles to include an innovation focus and creating innovation-specific hires within their Colombian offices. Within government, President Santos is prioritizing innovation, largely with a focus on implementing changes within the Ministry of Health, which came under additional pressure as the Millennium Development Goals neared their 2015 deadline.⁵

Several new healthcare innovations are emerging in Colombia in response to gaps noted above. Of the innovating companies that we discovered in this research, the majority were either developing new products or were unfolding models designed to solve consumer-facing challenges in care delivery, such as wait times. Several innovators have developed promising new technologies with the potential to be disruptive. Take Ubiquo Telemedicina, their initial focus was on intra-hospital technology solutions to facilitate the storing and sharing of medical information, in particular images (such as CTs or ultrasounds). They primarily sell their technology to private providers but have begun to work with public hospitals as well. They also have expanded their focus from intra-hospital technology to include telemedicine and have added telemedicine components to their model. As of December 2015, Ubiquo Telemedicina was in more than 75 facilities around Colombia.

Another primary theme among innovative models in Colombia revolves around new consumer solutions. Companies are beginning to create new solutions that challenge the way products and services are currently delivered in the Colombian healthcare system, including new e-commerce platforms that reduce costs to consumers and health plans that provide faster access to healthcare. As an illustration, Bive acts as a bridge between healthcare consumers and private providers, helping to connect low- and middle-income Colombians with high-quality, timely healthcare that they can afford. Bive has aggregated a network of healthcare providers in the state of Caldas who have agreed to offer services at discounted rates to Bive members. On the consumer side, Bive sells annual memberships for approximately \$40 USD that cover the purchasing individual and up to five additional family members. With this Bive membership, customers are able to schedule appointments with providers in the Bive network at discounted rates, and they are guaranteed to see a provider within seven days.

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BLACK BOOK™
RESEARCH

Europe

Germany

EHR Status

The government, through the Federal Ministry of Health developed electronic Health Cards for citizens covered by insurance. The smart card contains users' personal information, history of medical records, and insurance details. The card is used by patients to access healthcare services that are covered by the insurance, which significantly eases interaction between healthcare professionals and patients.

Acknowledging the importance of digitalization, Germany passed the first E-Health law of its history in 2015. The law outlines a roadmap to build a nationwide digital infrastructure, aims to facilitate access to health information, and governs the introduction of new digital applications. While the first new services, such as remote consultation, emergency data storage, electronic medication plan, and electronic physician's letter have been rolled out, the most significant changes came into place during the beginning of 2019.

As 2018 concluded, Germany had implemented a nationwide network that enabled the secure data transmission among healthcare providers. Designated as the largest IT project in the world by the Ministry of Health, the telematics infrastructure connects over 2.5 million healthcare professionals and hold data of 70-80 million citizens. Starting in 2019, healthcare professionals were able to store health related patient data on the new and highly secure infrastructure in the form of a statutory electronic patient record.

In the past few months, two health-insurance-led initiatives, covering together a total of 35 million people, launched a different and more patient-focused electronic patient record, termed personal health record (PHR). In contrast to the government-led and provider-focused statutory EPR, the PHR is patient-focused, includes patient-collected health data, and is more easily accessible through mobile devices.¹

Market Dynamics

The Federal Republic of Germany is in central Europe, with 81.8 million inhabitants (2011), making it by some distance the most populated country in the European Union. Germany is the world's fourth largest healthcare market and ranked among the top ten in health expenditure per capita measured as a percentage of GDP. Nonetheless, Germany's healthcare system to date exhibits a comparatively low degree of digitalization. Recent developments in infrastructure and legal provisions, however, imply that the time of change is soon to come.

In the German health care system, decision-making powers are traditionally shared between national and state levels, with much power delegated to self-governing bodies. It provides universal coverage for a wide range of benefits. Since 2009, health insurance has been mandatory for all citizens and permanent residents, through either statutory or private health insurance. A total of 70 million people or 85% of the population are covered by statutory health insurance. Another 11% are covered by substitutive private health insurance. A key feature of the health care delivery system in Germany is the clear institutional separation between public health services, ambulatory care, and hospital (inpatient) care. This has increasingly been perceived as a barrier to change and so provisions for integrated care are being introduced with the aim of improving cooperation between ambulatory physicians and hospitals.

Germany invests a substantial amount of its resources on health care: 11.4% of gross domestic product in 2012, which is one of the highest levels in the European Union. In international terms, the German health care system has a generous benefit basket, one of the highest levels of capacity as well as relatively low cost-sharing. However, the German health care system still needs improvement in some areas, such as the quality of care. In addition, the division into statutory and private health insurance remains one of the largest challenges for the German health care system, as it leads to inequalities. The general direction is clear; Germany is heading towards a digital transformation of its healthcare system, which will unlock many possibilities for manufacturers who wish to access the German healthcare market with innovative, digital health solutions.

The German Social Security Code requests that "data on findings, diagnoses, therapeutic measures, treatment reports and vaccinations for cross-case and multi-patient documentation about the patient" be stored in EHRs. The technical requirements for EHRs were specified by a company called *Gematik Gesellschaft für Telematikwendungen der Gesundheitskarte*, a company for telecommunication applications for the electronic health card, in December 2018.

EHRs are hailed as the key to increasing the quality of care. The Appointment Service and Supply Act adopted on March 14th, 2019, requires the German statutory health insurance funds to provide policyholders with electronic health records from January 1st, 2021 onwards.²

Constraints

Widespread criticism of personal health records' security arose soon after the launch of a mobile application. According to the providers' websites, all personal health records are end-to-end encrypted. Some PHR apps even have a two-factor authentication system like the one used in online banking. Vivy was launched in September 2018, while other applications were still in the development phase. Vivy was strongly criticized barely 24 hours after it had been launched. Users discovered that the app transmitted data to third parties, in this case to tracking companies abroad, before the user even had the opportunity to agree to the app's privacy policy.

Customers pointed out that advertising and analytics modules have no place in apps that process highly sensitive information such as health data. Other security experts agree and have substantiated their findings with an in-depth safety report and a lecture at the 35th Chaos Communication Congress. In a press release published on December 27th, 2018, Vivy pointed out that the attack scenarios presented were no longer valid at the time of their presentation and that no Vivy user had been affected.¹ Although the issue had been resolved, a security breach like this leads people to be more skeptical of already new technology.

Opportunities

The new government is putting significant emphasis on digital health and has announced to present its digitalization strategy for the healthcare system in autumn of 2018. Besides carving out the future direction of electronic patient records standards, the new plan is expected to shed light on more flexible methods for health technology assessment of digital health solutions, to open faster routes to market for quality-controlled apps and to unlock opportunities for data usage, both for patients and for research.

EHRs that conform to law are much safer than PHRs. There is an advantage in the use of connectors and the electronic health card. Health records will be migrated towards approved and certified electronic health records by the end of 2020. A possible mobile application for EHRs will feature an authentication method that is different from the current one by way of connectors and PHRs. Near field communication, as used by credit cards, might be a possible solution. Health insurance companies will also be given the possibility to transfer data from their systems to EHR by April 2019.

On February 6th, 2019, the European Commission issued recommendations that will facilitate access to health data across borders in full compliance with the General Data Protection Regulation. The recommendations propose that EU Member States extend this possibility to patient summaries, ePrescriptions, laboratory tests, medical discharge reports and images and imaging reports. Germany appears to be well positioned as far as the EU's recommendations on a European personal health record exchange format are concerned.

E-Prescriptions is another opportunity that lies in Germany's IT. The e-Prescription is to be established in Germany by 2020. The ideal process would be that the e-Prescription will be part of the electronic patient record. The moment a patient is in the pharmacy with my electronic health card, the pharmacist can access it. The e-Prescription will bring real added value to the economy. If they combine it with online consultations or pharmacy delivery services, the range of services offered to patients will be extended to bring the digital component to healthcare they are looking for.³

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Italy

EHR Status

The national pact for eHealth was approved on July 7th, 2016. It represents the strategic plan aimed to achieve efficiency, transparency, and sustainability of the National Healthcare Service, through digital innovation in healthcare.

The implementation of a program known as Bricks, representing common elements and building blocks of the healthcare system, was launched in 2004. It establishes the toolkit necessary to ensure a common language for:

- classification and codification of concepts such as healthcare services, facilities etc.
- sharing of methodologies to measure and compare quality and efficiency of the Regional Healthcare Services such as waiting times
- achieving a uniform approach in the generation of data and information for the Fundamental Levels of Healthcare Services

The Bricks toolkit helps to ensure interoperability in the information systems developed by the regions and by the local healthcare administrations.

The New National Healthcare Information System seeks to build an integrated system of individual health records, where patient information and the healthcare delivery structure are the central entities but provide information on all levels of operating healthcare facilities, services delivered, as well as human and financial resources used by the patient. The Ministry of Health and the Digital Italy Agency monitored the progress of EHRs in all of the regions: 33% work, 47% are in progress, and 19% are not yet working in certain regions.¹

Market Dynamics

Italy is the sixth largest country in Europe and has the second highest average life expectancy, reaching 79.4 years for men and 84.5 years for women in 2011. There are marked distinctions for both men and women in most health indicators, reflecting the economic and social imbalance between the north and south of the country. In 2012, total health expenditure accounted for 9.2% of GDP, slightly below the EU average of 9.6%.²

It has nationalized health care, and every legal resident of Italy can access the system either for free or at a relatively limited cost. The health care system in Italy is a regionally based national health service known as Servizio Sanitario Nazionale (SSN). It is organized first by region and then by district within each region and is funded through both national and regional taxes. It provides free of charge universal coverage at the point of service. How much each person co-pays for specific health services or pharmaceuticals is determined by which income bracket he/she has declared when registering with the system. While the national level ensures the general objectives and fundamental principles of the national health care system are met, regional governments in Italy are responsible for organizing and delivering primary and secondary health care services as well as preventive and health promotion services. Health care facilities vary in terms of quality in different regions of Italy.

Italy shows an articulated health care system aimed at ensuring citizens with essential levels of care, in terms of access and quality. A law passed in 2012 has defined the linkage of all health data flows at national level. It introduced

a unique identifier nation-wide which allows interconnection of all health data flows focused on that person, known as Codice Univoco Nazionale dell'Assistito (CUNA). The decree of the Ministry of health on December 7th, 2016 defines the allowed purposes, processes, technical measures, and the security measures to guarantee the compliance of the treatments with the law. The CUNA will allow to "follow" patients in their path throughout all regions through different care settings such as hospitalization, drugs, and homecare.³

The Italian Ministry of Health has identified eHealth as one of the paramount strategic goals to be reached. Its priorities cover EHRs, telemedicine, and ePrescriptions. Since 2008 this branch of government has been implementing many different eHealth initiatives nation-wide in collaboration with regions. This will generate essential levels of information thus supporting health care processes, National Healthcare Service governance, and clinical documents dematerialization in favor of managerial and organizational processes.¹

Electronic Health Records will be utilized to respond to the citizen's needs while being a key element towards an integrated model of care. In order to accelerate the implementation of the interoperability services among the regional EHRs, and to speed-up deployment of EHR for regions behind schedule, the law modified the provisions regarding the National Infrastructure for Interoperability (INI). This infrastructure will also provide a complete EHR solution, to be used by those regions where the local implementation is late or too slow, hence enabling a timely roll-out of the EHR.

The National Guidelines for Telemedicine have been endorsed, on February 20th, 2014 by the National Permanent Conference for relations between State and Regions. The law models that systems should be flexible, interoperable, and adaptable to different social health care systems in order to share telemedicine best practices. In regards to regulations for ePrescriptions, a decree established in 2010 defined the prescription dematerialization process. It established that the data electronic transmission of ePrescriptions replace conventional paper prescriptions. Further regulations stated the gradual transition should lead to 90% of ePrescriptions in all Italian regions.

Constraints

Interregional inequity is a long-standing concern. The less affluent south trails the north in the number of beds and availability of advanced medical equipment, has proportionally fewer public versus private facilities, and has less-developed community care services; this gap in availability is increasing. Income-related disparities in self-reported health status are significant, though similar to those in the Netherlands, Germany, and other European countries.

Containing health care costs is a core concern of the central government, as Italy's public debt is among the highest of the industrialized nations. Fiscal capacity varies greatly across regions. To meet cost-containment objectives, the central government can impose recovery plans on regions with health care expenditure deficits. These identify tools and measures needed to achieve economic balance: revision of hospital and diagnostic fees, reduction of the number of beds, increased copayments for pharmaceuticals, and reduction of human resources through limited turnover.³

The eHealth initiatives are aimed at bridging the gap between the regions and also at pursuing improved health and health care delivery together with sustainability of the whole National Healthcare Service. To this aim it is fundamental to ensure maximum synergy between all actors involved in order to achieve a harmonious and coherent development of eHealth in the whole country.

Opportunities

In order to reduce disparities, the regions receive a proportion of funding from an equalization fund, known as Fondo Perequativo Nazionale. Aggregate funding for the regions is set by the Ministry of the Economy and Finance, and the resource allocation mechanism is based on capitation adjusted for demographic characteristics and use of health services by age and sex.

As for the status of electronic health records, some regions have developed computerized networks to facilitate communication between physicians, pediatricians, hospitals, and territorial services and to improve continuity of care. These networks allow the automatic transfer of patient registers and of information on services provided, prescriptions for specialist visits and diagnostics, and laboratory and radiology test outcomes. A few regions have also developed a personal electronic health record, accessible by the patient, which contains all of his or her medical information, such as outpatient specialty care results, medical prescriptions, and hospital discharge instructions. Personal electronic health records are meant to provide support to patients and clinicians across the whole process of care, but diffusion is still limited.³

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CENTRAL EUROPE

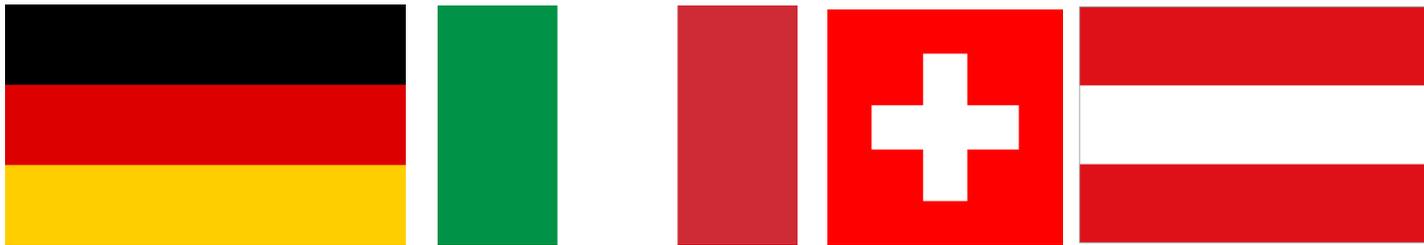
2019 EHR SURVEY RESPONSE RATES BY PRACTICE/ORGANIZATION TYPE, VALIDATED SYSTEM USERS 377 RESPONDENTS

2019 SURVEY RESPONDENT IDENTIFICATION	PERCENT OF TOTAL RESPONSES
Physician/Clinician Name	16%
Clinic/Practice Name	12%
Public Clinic	29%
Health System Clinic	14%
Academic Hospital and Medical Centers over 250 Beds	17%
Community Hospitals	10%
Small Hospitals under 100 Beds	2%
Ambulatory Surgery Centers	0%
TOTAL	100%

Source: Black Book™ 2019

2019 RESULTS

ELECTRONIC HEALTH RECORDS & PRACTICE TECHNOLOGY



HEALTH INFORMATION SYSTEMS

STOP LIGHT SCORING KEY

2019 TOP OVERALL AMBULATORY EHR EMR HIT VENDOR HONORS

EUROPE

AGFA

FUNCTIONAL SUBSET HONORS: TOP VENDORS FOR EUROPE

TOP VENDOR: PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING

AGFA

TOP VENDOR: INTEROPERABILITY, COMMUNICATIONS AND CONNECTIVITY

PHILIPS

TOP VENDOR: ORDER ENTRY AND MANAGEMENT

AGFA

TOP VENDOR: RESULTS REVIEW/MANAGEMENT AND DECISION SUPPORT

CERNER

STOP LIGHT SCORING KEY

FIGURE 1: COMPREHENSIVE END-TO-END EMR VENDORS ARE DEFINED AS BEING COMPRISED OF FOUR SURVEYED FUNCTIONS

PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & INTEROPERABILITY, CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/MANAGEMENT
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Source: Black Book Research

FIGURE 2: KEY TO RAW SCORES

0.00 – 5.79 ▶	◀ 5.80 – 7.32 ▶	◀ 7.33 – 8.70 ▶	◀ 8.71 – 10.00
Deal breaking dissatisfaction	Neutral	Satisfactory performance	Overwhelming satisfaction
Does not meet expectations	Meets/does not meet expectations consistently	Meets expectations	Exceeds expectations
CANNOT RECOMMEND VENDOR	WOULD NOT LIKELY RECOMMEND VENDOR	RECOMMENDS VENDOR	HIGHLY RECOMMENDED VENDOR

Source: Black Book Research

STOP LIGHT SCORING KEY

FIGURE 3: COLOR-CODED STOP LIGHT DASHBOARD SCORING KEY	
Green 8.71 +	(Top 10%) scores better than 90% of EHR vendors. Green coded vendors have received constantly highest client satisfaction scores.
Clear	(Top 33%) scores better than 67% of EHR vendors. Well-scored vendor which have middle of the pack results.
Yellow 5.80 to 7.32	Scores better than half of EHR vendors. Cautionary performance scores, areas of improvement required.
Red Less than 5.79	Scores worse than 66% of EHR vendors. Poor performances reported potential cause for contract cancellations.

Source: Black Book Research

STOP LIGHT SCORING KEY

FIGURE 4: RAW SCORE COMPILATION AND SCALE OF REFERENCE

Black Book raw score scales

1 = Deal breaking dissatisfaction ◀ ▶ **10 = Exceeds all expectations**

Source: Black Book Research

Individual vendors can be examined by specific indicators on each of the main functions of EHR vendors as well as grouped and summarized subsets. Details of each subset are contained so that each vendor may be analyzed by function and end-to-end EHR services collectively.

STOP LIGHT SCORING KEY

FIGURE 5: SCORING KEY							
OVERALL RANK	Q1 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIO NS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
5	1	EHR NAME	8.49	8.63	8.50	8.01	8.66

Source: Black Book Research

- **Overall rank** – this rank references the final position of all 18 criteria averaged by the mean score collectively. This vendor ranked fifth of the 20 competitors.
- **Criteria rank** – refers to the number of the question or criteria surveyed. This is the sixth question of the 18 criteria of which this vendor ranked first of the 20 vendors analyzed positioned only on this particular criteria or question. Each vendor required ten unique client ballots validated to be included in the top ten ranks.
- **Company** – name of the EHR vendor.
- **Subsections** – each subset comprises one-fourth of the total EHR vendor mean at the end of this row and includes all buyers and users who indicate that they contract each respective EMR functional subsection with the supplier, specific to their physician enterprise.
- **Mean** – congruent with the criteria rank, the mean is a calculation of all three subsets of EHR functions surveyed. As a final ranking reference, it includes all market sizes, specialties, delivery sites and geographies.

OVERALL KPI LEADERS

EUROPE

Summary of criteria outcomes

TABLE 1: SUMMARY OF CRITERIA OUTCOMES		
Total number one criteria ranks	Vendor	Overall rank
7	AGFA	1
8	PHILIPS	2
3	CERNER	3

Source: Black Book Research

OVERALL KPI LEADERS: AMBULATORY EHR

EUROPE

Top score per individual criteria

TABLE 2: TOP SCORE PER INDIVIDUAL CRITERIA			
Questions	Criteria	EHR Vendor	Overall
1	Strategic Alignment of Client Goals	PHILIPS	2
2	Innovation & Optimization	AGFA	1
3	Training	PHILIPS	2
4	Client relationships and cultural fit	PHILIPS	2
5	Trust, Accountability, Transparency, Ethics	AGFA	1
6	Breadth of offerings, client types, delivery excellence	AGFA	1
7	Deployment and outsourcing implementation	AGFA	1
8	Customization	PHILIPS	2
9	Integration and interfaces	CERNER	3
10	Scalability, client adaptability, flexible pricing	CERNER	3
11	Compensation and employee performance	AGFA	1
12	Reliability	PHILIPS	2
13	Brand image and marketing communications	PHILIPS	2
14	Marginal value adds and modules	PHILIPS	2
15	Financial & Managerial Viability	AGFA	1
16	Data security and backup services	CERNER	3
17	Support and customer care	AGFA	1
18	Best of breed technology and process improvement	PHILIPS	2

INDIVIDUAL EHR VENDOR KEY PERFORMANCE INDIVIDUAL EHR VENDOR KEY PERFORMANCE

KEY

A = 90% Agree
 B = 75% Agree
 C = 50% Agree
 D = 25% or Less Agree

RANK	EHR VENDOR CENTRAL EUROPE	DELIVERED ON EXPECTATIONS	IMPLEMENTATION ON TIME	TOTAL COST OF OWNERSHIP ON BUDGET
1	AGFA	A	A	A
2	PHILIPS	B	A	B
3	CERNER	A	D	A
4	EPIC SYSTEMS	B	B	D
5	MEDIASYS DEDALUS	B	C	C
6	INTERSYSTEMS	C	C	C
7	CHIPSOFT	D	C	C
8	KANTAR	C	C	D
9	DRAEGER	D	D	C
10	SIEMENS	D	D	D

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

EUROPE

Strategic Alignment of Vendor Offerings to Physician Practice Goals & Client's Mission

Table 5: Organizational structure meets the needs of stakeholders or customers and stakeholder satisfaction is the most important priority. EHR client is likely to recommend the vendor to similar sized physician groups, physicians within the same specialty or delivery setting.

OVERALL RANK	Q1 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
2	1	PHILIPS	8.62	9.20	9.13	9.34	9.07
1	2	AGFA	8.85	9.17	9.09	8.84	8.99
3	3	CERNER	7.47	8.01	8.11	9.03	8.16

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

EUROPE

Innovation and Optimization

Table 6: Customers are also continuing to push the envelope for further enhancements to which the EHR vendor is responsive. EHR clients also believe that their vendors' technology is helping them manage practices more effectively, generate accurate records and reimbursement billings and cut their overhead in ways that were difficult or impossible to accomplish before electronic medical records were implemented. Vendor is responsive to make client recommendations with cutting edge improvements.

OVERALL RANK	Q2 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	AGFA	9.56	9.41	9.45	9.28	9.43
2	2	PHILIPS	9.30	9.56	9.26	9.35	9.37
3	3	CERNERC	8.63	7.79	8.59	7.58	8.15

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

EUROPE

Training

Table 7: Electronic medical and health record vendor leadership provides significant and meaningful training opportunities for internal employees and client staff. Leadership strives to develop technology staff, EMR/EHR client service and customer servicing consultant employees. Training modules are effective and practical so that minimal post-implementation training is required on or off site. Regular updates are timely and require minimal additional training to implement.

OVERALL RANK	Q3 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
2	1	PHILIPS	8.31	8.48	9.14	8.86	8.70
1	2	AGFA	8.83	8.04	8.72	8.73	8.58
3	3	CERNER	8.19	8.02	8.94	8.88	8.51

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

EUROPE

Client relationships and cultural fit

Table 8: EHR vendor leadership honors customer relationships highly. The relationship with the EHR elevates the customer reputation. Improving physician practice and healthcare delivery efficiency and effectiveness is a priority of the supplier. Governance of engagement is neither complex for buyer nor does it require vendor management attention regularly. There is no regular transparency or quality issue. There are no culture clashes or misfits that threaten relationship's success or client's satisfaction.

OVERALL RANK	Q4 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
2	1	PHILIPS	9.24	9.59	9.15	9.62	9.40
1	2	AGFA	9.35	9.26	9.34	9.38	9.33
3	3	CERNER	8.25	8.24	8.14	7.77	8.10

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

EUROPE

Trust, Accountability, Ethics and Transparency

Table 9: Trust in enterprise reputation is important to EHR clients as well as prospects. Client possesses an understanding that its EHR organization has the people, processes, and resources to effectively deliver the desired business and clinical results, based on its industry reputation and past performance. There are no disconnects between promises and delivery.

OVERALL RANK	Q5 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	AGFA	9.70	9.59	9.54	9.70	9.63
2	2	PHILIPS	9.18	9.39	9.03	9.59	9.30
3	3	CERNER	7.51	7.72	7.52	8.32	7.77

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

EUROPE

Breadth of offerings, varied client settings, delivery excellence across all user types

Table 10: EMR/EHR vendor offers industry recognized horizontal functionality and vertical industry applications and manage bundled EMR services such as ePrescribing and developing new e-Health initiatives. Vendor routinely drives operational performance improvements and results in the areas they affect. Comprehensive offerings are constructed to meet the unique needs of the client’s EHR initiatives. Breadth of vendor modules offers comprehensive system services and broad modules.

OVERALL RANK	Q6 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	AGFA	8.64	8.89	8.95	9.50	9.00
2	2	PHILIPS	8.64	8.44	8.40	8.10	8.39
3	3	CERNER	7.75	6.30	6.07	9.01	7.28

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

EUROPE

Deployment and EHR implementation

Table 11: EHR client deploys at a pace acceptable to the client. EHR solutions eliminate excessive supervision over vendor implementations. Vendor overcomes client implementation obstacles and challenges effectively. Technical, organizational and cultural implementation obstacles are handled professionally and punctually. EHR implementation time meets standard expectations. Implementations are efficient and sensitive to users' specific situations which may cause delays.

OVERALL RANK	Q7 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	AGFA	9.43	9.37	9.55	9.67	9.51
3	2	CERNER	9.45	8.84	9.30	9.08	9.17
2	3	PHILIPS	8.59	8.75	8.73	8.42	8.62

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

EUROPE

Customization

Table 12: EHR products and process services are customized to meet the unique needs of specific practice client purpose, processes and physician models. Little resistance is encountered when changing performance measurements as clients' needs vary. Extraordinary efforts are made to adapt and convert client special needs into workable solutions with efficient cost and time considerations. EMR software allows for modifications that are not costly or complex.

OVERALL RANK	Q8 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
2	1	PHILIPS	9.38	9.27	9.15	9.43	9.31
1	2	AGFA	9.51	9.19	8.87	9.20	9.19
3	3	CERNER	8.84	9.15	8.69	8.98	8.92

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

EUROPE

Integration and interfaces

Table 13: EHR vendor supports interfaces so information can be shared between necessary applications. Solutions are easily integrated to existing backend systems as needed and HIE feasible. Seamless interfaces to legacy applications are performed as required for optimal functioning. Human integration and interface activities are administered precisely. Systems communicate effectively among provider groups and ancillaries. True interoperability with other healthcare organizations is factored into implementation.

OVERALL RANK	Q9 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
3	1	CERNER	8.06	9.60	8.71	9.34	8.93
1	2	AGFA	8.31	8.33	8.26	8.07	8.25
2	3	PHILIPS	7.92	8.49	7.73	8.61	8.19

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

EUROPE

Scalability, client adaptability, flexible pricing

Table 14: EHR services and solutions vendor provides flexible pricing allowing the client to choose and pay for the precise functionality and services needed. Vendor invests in significant infrastructure and has the ability to provide services to enterprise organizations. IT products and services meet the changing and varied needs of the EHR customer. Pricing is not rigid or shifting and meets needs of client.

OVERALL RANK	Q10 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
3	1	CERNER	9.14	8.89	8.62	9.29	8.99
2	2	PHILIPS	9.27	8.54	9.11	8.89	8.95
1	3	AGFA	8.51	8.59	8.78	8.64	8.63

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

EUROPE

Vendor staff expertise, compensation and employee performance

Table 15: EHR vendor team of employees is considered top in industry for professionalism and skill. Vendor attracts and retains high performing staff. Vendor is focused on building and developing a strong employee team of producers. Employees act like owners/leaders. Company is moving towards leveraged pay at all levels. Vendor is using effective tools to tie performance metrics to compensation policy and compensating top leaders. Human resources-related criteria are scored from the client perspective on this indicator.

OVERALL RANK	Q11 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	AGFA	9.20	9.18	8.51	9.47	9.09
3	2	CERNER	7.08	8.32	8.25	8.38	8.01
2	3	PHILIPS	7.64	7.12	7.17	7.07	7.23

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

EUROPE

Reliability

Table 16: EHR supplier meets agreed terms as evidenced by routine, acceptable service level reporting and industry expectations. Depth and breadth of applications/solutions are acceptable in meeting client needs. Online reliability meets expectations and outages/downtimes are minimized. Solid product and service capacities are demonstrated consistently. Service levels are consistently met as agreed. Services and support response is expedient and resources are appropriately provided by vendor team.

OVERALL RANK	Q12 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
2	1	PHILIPS	8.73	8.39	9.34	9.02	8.87
1	2	AGFA	8.86	8.53	9.00	9.00	8.85
3	3	CERNER	9.11	8.32	9.12	8.77	8.83

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

EUROPE

Brand image and marketing communications

Table 17: EHR vendor’s marketing and sales statements/pitches are accurately and appropriately represented by actual EMR product and service deliverables. Image is consistent with top EHR rankings. Sales presentations and proposals are delivered upon and corporate integrity/honesty in marketing and business development are highly valued. Company image and integrity are values upheld top-down consistently. Elevated level of relevant client communications enhances the EHR vendor – EHR user relationship.

OVERALL RANK	Q13 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
2	1	PHILIPS	9.49	9.42	9.56	9.48	9.49
1	2	AGFA	9.61	9.19	9.40	9.64	9.46
3	3	CERNER	8.71	7.76	8.95	8.79	8.55

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

EUROPE

Marginal value adds

Table 18: Beyond stimulus achievement, EHR vendors' cost savings are realized as generally estimated and not over-positioned or over/underestimated in ways that effect major client satisfaction or costs. Vendor offers value-adds as a practice management partner in cost savings and avoidance initiatives and creative programs through bundled EMR product design. Provides true business transformation opportunities to physician practices and other medical settings utilizing EHR.

OVERALL RANK	Q14 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
2	1	PHILIPS	9.33	9.60	9.26	9.31	9.38
1	2	AGFA	8.94	9.34	9.06	9.37	9.18
3	3	CERNER	8.17	8.06	7.35	8.42	8.00

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

EUROPE

Viability and managerial stability

Table 19: Vendor’s viability, employee turnover, financial stability and/or cultural mismatches do not threaten relationship. Senior management and the board exemplify strong leadership principals to steward appropriate resources that impact EHR buyers. Client is confident of long term industry viability for this vendor based on investments, client adoption, exceptional outcomes and service levels. Field management is notably competent, stable and supportive of clients. EHR vendor demonstrates and provides evidence of competent fiscal management and leadership.

OVERALL RANK	Q15 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	AGFA	9.20	9.80	9.51	8.47	9.25
2	2	PHILIPS	8.41	8.80	9.43	9.21	8.96
3	3	CERNER	8.56	9.34	8.79	8.97	8.92

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

EUROPE

Data security and backup services

Table 20: In order to provide secure and constantly dependable EMR service offerings for physician and hospital/IDN affiliate practices and entities, an EHR vendor has to provide the highest level of security and data back-up services. EHR vendor's service in these two areas is superior to the security and back-up system of past internal systems of the physician practice.

OVERALL RANK	Q16 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
3	1	CERNER	8.46	7.89	9.10	8.06	8.38
1	2	AGFA	9.00	8.10	7.77	8.61	8.37
2	3	PHILIPS	8.06	8.41	8.83	8.02	8.33

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

EUROPE

Support and customer care

Table 21: Account management provides an adequate amount of onsite administration and support to clients. There exists a formal EHR account management program that meets client needs. Media and clients reference this vendor as an EMHR services leader and top vendor correctly. Customer services and relationship satisfaction is manifested through significant flagship clients as well as smaller and newest customers similarly. Vendor provides appropriate number of accessible support and customer care personnel.

OVERALL RANK	Q17 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	AGFA	9.80	9.56	9.84	9.58	9.70
2	2	PHILIPS	9.16	9.61	9.76	9.67	9.55
3	3	CERNER	9.47	9.43	9.28	9.22	9.35

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

EUROPE

Best of breed technology and process improvement developments

Table 22: EHR management and related technology services are considered best of breed. EHR Vendor technology elevates customers via capabilities, equipment, processes, deliverables, professional staff, leadership, quality assurance and innovative initiatives. EHR services are delivered at or above current/former in-house service levels. Technology is current and relevant to exchanging health information among providers, as well as sufficiently offering patient access.

OVERALL RANK	Q18 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
2	1	PHILIPS	9.20	9.62	9.23	9.08	9.28
1	2	AGFA	8.35	8.73	9.69	9.47	9.06
3	3	CERNER	9.42	9.15	8.80	8.68	9.01

Source: Black Book™ 2019

EUROPE (SCANDINAVIA)

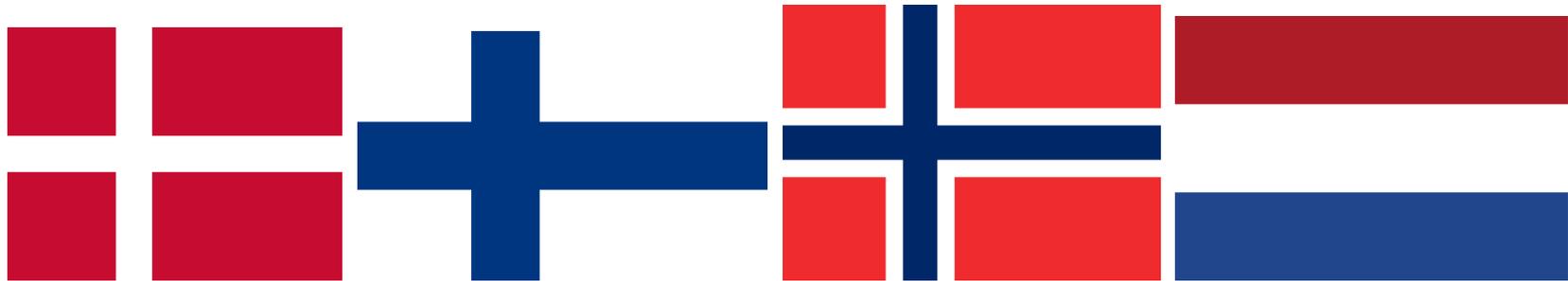
2019 EHR SURVEY RESPONSE RATES BY PRACTICE/ORGANIZATION TYPE, VALIDATED SYSTEM USERS 424 RESPONDENTS

2019 SURVEY RESPONDENT IDENTIFICATION	PERCENT OF TOTAL RESPONSES
Physician/Clinician Name	8%
Clinic/Practice Name	6%
Public Clinic	15%
Health System Clinic	34%
Academic Hospital and Medical Centers over 250 Beds	13%
Community Hospitals	20%
Small Hospitals under 100 Beds	4%
Ambulatory Surgery Centers	0%
TOTAL	100%

Source: Black Book™ 2019

2019 RESULTS

ELECTRONIC HEALTH RECORDS & PRACTICE TECHNOLOGY



HEALTH INFORMATION SYSTEMS

STOP LIGHT SCORING KEY

2019 TOP OVERALL AMBULATORY EHR EMR HIT VENDOR HONORS

EUROPE (SCANDINAVIA)

CAMBIO HEALTHCARE

FUNCTIONAL SUBSET HONORS: TOP VENDORS FOR EUROPE (SCANDINAVIA)

TOP VENDOR: PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING

CAMBIO HEALTHCARE

TOP VENDOR: INTEROPERABILITY, COMMUNICATIONS AND CONNECTIVITY

TIETO LIFECARE

TOP VENDOR: ORDER ENTRY AND MANAGEMENT

CAMBIO HEALTHCARE

TOP VENDOR: RESULTS REVIEW/MANAGEMENT AND DECISION SUPPORT

INTERSYSTEMS

STOP LIGHT SCORING KEY

FIGURE 1: COMPREHENSIVE END-TO-END EMR VENDORS ARE DEFINED AS BEING COMPRISED OF FOUR SURVEYED FUNCTIONS

PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & INTEROPERABILITY, CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/MANAGEMENT
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Source: Black Book Research

FIGURE 2: KEY TO RAW SCORES

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Deal breaking dissatisfaction	Neutral	Satisfactory performance	Overwhelming satisfaction
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FIGURE 4: RAW SCORE COMPILATION AND SCALE OF REFERENCE

Black Book raw score scales

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OVERALL KPI LEADERS

EUROPE (SCANDINAVIA)

Summary of criteria outcomes

TABLE 2: SUMMARY OF CRITERIA OUTCOMES		
Total number one criteria ranks	Vendor	Overall rank
9	CAMBIO HEALTHCARE	1
4	TIETO LIFECARE	2
5	EPIC SYSTEMS	3

Source: Black Book Research

OVERALL KPI LEADERS: AMBULATORY EHR

EUROPE (SCANDINAVIA)

Top score per individual criteria

TABLE 2: TOP SCORE PER INDIVIDUAL CRITERIA

Questions	Criteria	EHR Vendor	Overall
1	Strategic Alignment of Client Goals	TIETO	2
2	Innovation & Optimization	CAMBIO HEALTHCARE	1
3	Training	EPIC	3
4	Client relationships and cultural fit	EPIC	3
5	Trust, Accountability, Transparency, Ethics	CAMBIO HEALTHCARE	1
6	Breadth of offerings, client types, delivery excellence	CAMBIO HEALTHCARE	1
7	Deployment and outsourcing implementation	CAMBIO HEALTHCARE	1
8	Customization	CAMBIO HEALTHCARE	1
9	Integration and interfaces	EPIC	3
10	Scalability, client adaptability, flexible pricing	CAMBIO HEALTHCARE	1
11	Compensation and employee performance	TIETO	2
12	Reliability	EPIC	3
13	Brand image and marketing communications	CAMBIO HEALTHCARE	1
14	Marginal value adds and modules	EPIC	3
15	Financial & Managerial Viability	CAMBIO HEALTHCARE	1
16	Data security and backup services	TIETO	2
17	Support and customer care	TIETO	2
18	Best of breed technology and process improvement	CAMBIO HEALTHCARE	1

INDIVIDUAL EHR VENDOR KEY PERFORMANCE INDIVIDUAL EHR VENDOR KEY PERFORMANCE

KEY

A = 90% Agree

B = 75% Agree

C = 50% Agree

D = 25% or Less Agree

RANK	EHR VENDOR SCANDINAVIA	DELIVERED ON EXPECTATIONS	IMPLEMENTATION ON TIME	TOTAL COST OF OWNERSHIP ON BUDGET
1	CAMBIO HEALTHCARE	A	A	A
2	TIETO LIFECARE	A	B	B
3	EPIC SYSTEMS	A	A	D
4	INTERSYSTEMS	B	B	C
5	AGFA	A	C	A
6	CERNER	C	C	D

EUROPE (SCANDINAVIA)

Strategic Alignment of Vendor Offerings to Physician Practice Goals & Client’s Mission

Table 5: Organizational structure meets the needs of stakeholders or customers and stakeholder satisfaction is the most important priority. EHR client is likely to recommend the vendor to similar sized physician groups, physicians within the same specialty or delivery setting.

OVERALL RANK	Q1 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
2	1	TIETO	9.19	9.50	9.46	9.81	9.49
1	2	CAMBIO	9.73	9.42	9.09	9.38	9.41
3	3	EPIC SYSTEMS	9.12	9.34	9.19	9.37	9.26

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

EUROPE (SCANDINAVIA)

Innovation and Optimization

Table 6: Customers are also continuing to push the envelope for further enhancements to which the EHR vendor is responsive. EHR clients also believe that their vendors' technology is helping them manage practices more effectively, generate accurate records and reimbursement billings and cut their overhead in ways that were difficult or impossible to accomplish before electronic medical records were implemented. Vendor is responsive to make client recommendations with cutting edge improvements.

OVERALL RANK	Q2 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	CAMBIO	9.08	9.20	9.03	8.97	9.07
2	2	TIETO	9.12	9.08	9.01	8.92	9.03
3	3	EPIC SYSTEMS	8.90	9.43	8.86	8.81	9.00

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

EUROPE (SCANDINAVIA)

Training

Table 7: Electronic medical and health record vendor leadership provides significant and meaningful training opportunities for internal employees and client staff. Leadership strives to develop technology staff, EMR/EHR client service and customer servicing consultant employees. Training modules are effective and practical so that minimal post-implementation training is required on or off site. Regular updates are timely and require minimal additional training to implement.

OVERALL RANK	Q3 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
3	1	EPIC SYSTEMS	9.64	9.76	9.55	9.24	9.55
2	2	TIETO	8.89	8.53	8.05	8.94	8.60
1	3	CAMBIO	8.76	8.78	8.29	7.93	8.44

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

EUROPE (SCANDINAVIA)

Client relationships and cultural fit

Table 8: EHR vendor leadership honors customer relationships highly. The relationship with the EHR elevates the customer reputation. Improving physician practice and healthcare delivery efficiency and effectiveness is a priority of the supplier. Governance of engagement is neither complex for buyer nor does it require vendor management attention regularly. There is no regular transparency or quality issue. There are no culture clashes or misfits that threaten relationship's success or client's satisfaction.

OVERALL RANK	Q4 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
3	1	EPIC SYSTEMS	9.32	9.23	9.32	9.36	9.31
2	2	TIETO	9.19	9.07	8.94	8.88	9.02
1	3	CAMBIO	9.16	9.15	9.11	8.51	8.98

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

EUROPE (SCANDINAVIA)

Trust, Accountability, Ethics and Transparency

Table 9: Trust in enterprise reputation is important to EHR clients as well as prospects. Client possesses an understanding that its EHR organization has the people, processes, and resources to effectively deliver the desired business and clinical results, based on its industry reputation and past performance. There are no disconnects between promises and delivery.

OVERALL RANK	Q5 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	CAMBIO	8.79	9.67	9.02	8.55	9.01
2	2	TIETO	9.08	8.88	9.39	8.35	8.93
3	3	EPIC SYSTEMS	8.37	8.68	9.31	9.09	8.86

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

EUROPE (SCANDINAVIA)

Breadth of offerings, varied client settings, delivery excellence across all user types

Table 10: EMR/EHR vendor offers industry recognized horizontal functionality and vertical industry applications and manage bundled EMR services such as ePrescribing and developing new e-Health initiatives. Vendor routinely drives operational performance improvements and results in the areas they affect. Comprehensive offerings are constructed to meet the unique needs of the client’s EHR initiatives. Breadth of vendor modules offers comprehensive system services and broad modules.

OVERALL RANK	Q6 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	CAMBIO	9.17	9.25	9.78	9.54	9.44
3	2	EPIC SYSTEMS	9.08	9.60	9.26	9.29	9.31
2	3	TIETO	9.36	8.58	9.10	9.03	9.02

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

EUROPE (SCANDINAVIA)

Deployment and EHR implementation

Table 11: EHR client deploys at a pace acceptable to the client. EHR solutions eliminate excessive supervision over vendor implementations. Vendor overcomes client implementation obstacles and challenges effectively. Technical, organizational and cultural implementation obstacles are handled professionally and punctually. EHR implementation time meets standard expectations. Implementations are efficient and sensitive to users' specific situations which may cause delays.

OVERALL RANK	Q7 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	CAMBIO	7.35	8.62	8.50	8.61	8.27
2	2	TIETO	7.78	8.00	8.59	8.01	8.10
3	3	EPIC SYSTEMS	7.01	7.02	7.04	7.20	7.07

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

EUROPE (SCANDINAVIA)

Customization

Table 12: EHR products and process services are customized to meet the unique needs of specific practice client purpose, processes and physician models. Little resistance is encountered when changing performance measurements as clients' needs vary. Extraordinary efforts are made to adapt and convert client special needs into workable solutions with efficient cost and time considerations. EMR software allows for modifications that are not costly or complex.

OVERALL RANK	Q8 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	CAMBIO	9.71	9.88	9.57	9.71	9.72
3	2	EPIC SYSTEMS	8.84	8.55	8.60	8.98	8.74
2	3	TIETO	9.17	7.73	8.74	8.83	8.62

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

EUROPE (SCANDINAVIA)

Integration and interfaces

Table 13: EHR vendor supports interfaces so information can be shared between necessary applications. Solutions are easily integrated to existing backend systems as needed and HIE feasible. Seamless interfaces to legacy applications are performed as required for optimal functioning. Human integration and interface activities are administered precisely. Systems communicate effectively among provider groups and ancillaries. True interoperability with other healthcare organizations is factored into implementation.

OVERALL RANK	Q9 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
3	1	EPIC SYSTEMS	8.80	8.79	8.96	9.08	8.91
1	2	CAMBIO	7.82	7.96	8.06	8.98	8.21
2	3	TIETO	8.32	8.43	7.10	8.56	8.10

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

EUROPE (SCANDINAVIA)

Scalability, client adaptability, flexible pricing

Table 14: EHR services and solutions vendor provides flexible pricing allowing the client to choose and pay for the precise functionality and services needed. Vendor invests in significant infrastructure and has the ability to provide services to enterprise organizations. IT products and services meet the changing and varied needs of the EHR customer. Pricing is not rigid or shifting and meets needs of client.

OVERALL RANK	Q10 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	CAMBIO	8.61	8.78	9.44	9.16	9.00
2	2	TIETO	9.13	8.34	9.02	9.03	8.88
3	3	EPIC SYSTEMS	7.41	7.32	7.24	6.18	7.29

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

EUROPE (SCANDINAVIA)

Vendor staff expertise, compensation and employee performance

Table 15: EHR vendor team of employees is considered top in industry for professionalism and skill. Vendor attracts and retains high performing staff. Vendor is focused on building and developing a strong employee team of producers. Employees act like owners/leaders. Company is moving towards leveraged pay at all levels. Vendor is using effective tools to tie performance metrics to compensation policy and compensating top leaders. Human resources-related criteria are scored from the client perspective on this indicator.

OVERALL RANK	Q11 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
2	1	TIETO	9.15	9.27	9.25	9.64	9.33
1	2	CAMBIO	9.17	9.07	9.06	9.25	9.14
3	3	EPIC SYSTEMS	8.03	7.90	7.87	8.36	8.04

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

EUROPE (SCANDINAVIA)

Reliability

Table 16: EHR supplier meets agreed terms as evidenced by routine, acceptable service level reporting and industry expectations. Depth and breadth of applications/solutions are acceptable in meeting client needs. Online reliability meets expectations and outages/downtimes are minimized. Solid product and service capacities are demonstrated consistently. Service levels are consistently met as agreed. Services and support response is expedient and resources are appropriately provided by vendor team.

OVERALL RANK	Q12 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
3	1	EPIC SYSTEMS	8.95	8.86	8.28	9.21	8.83
1	2	CAMBIO	9.00	9.01	8.42	8.45	8.72
2	3	TIETO	8.67	8.35	8.84	8.43	8.57

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

EUROPE (SCANDINAVIA)

Brand image and marketing communications

Table 17: EHR vendor’s marketing and sales statements/pitches are accurately and appropriately represented by actual EMR product and service deliverables. Image is consistent with top EHR rankings. Sales presentations and proposals are delivered upon and corporate integrity/honesty in marketing and business development are highly valued. Company image and integrity are values upheld top-down consistently. Elevated level of relevant client communications enhances the EHR vendor – EHR user relationship.

OVERALL RANK	Q13 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	CAMBIO	9.87	9.87	9.71	9.76	9.80
2	2	TIETO	9.35	9.56	9.20	9.76	9.47
3	3	EPIC SYSTEMS	8.41	9.06	9.12	9.19	8.95

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

EUROPE (SCANDINAVIA)

Marginal value adds

Table 18: Beyond stimulus achievement, EHR vendors' cost savings are realized as generally estimated and not over-positioned or over/underestimated in ways that effect major client satisfaction or costs. Vendor offers value-adds as a practice management partner in cost savings and avoidance initiatives and creative programs through bundled EMR product design. Provides true business transformation opportunities to physician practices and other medical settings utilizing EHR.

OVERALL RANK	Q14 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
3	1	EPIC SYSTEMS	9.65	9.59	9.89	9.77	9.73
2	2	TIETO	9.67	9.06	9.52	9.30	9.39
1	3	CAMBIO	8.81	8.97	8.95	8.64	8.84

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

EUROPE (SCANDINAVIA)

Viability and managerial stability

Table 19: Vendor’s viability, employee turnover, financial stability and/or cultural mismatches do not threaten relationship. Senior management and the board exemplify strong leadership principals to steward appropriate resources that impact EHR buyers. Client is confident of long term industry viability for this vendor based on investments, client adoption, exceptional outcomes and service levels. Field management is notably competent, stable and supportive of clients. EHR vendor demonstrates and provides evidence of competent fiscal management and leadership.

OVERALL RANK	Q15 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	CAMBIO	8.51	9.21	8.98	8.61	8.83
2	2	TIETO	9.30	9.17	8.44	8.19	8.78
3	3	EPIC SYSTEMS	9.13	9.09	7.83	8.71	8.69

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

EUROPE (SCANDINAVIA)

Data security and backup services

Table 20: In order to provide secure and constantly dependable EMR service offerings for physician and hospital/IDN affiliate practices and entities, an EHR vendor has to provide the highest level of security and data back-up services. EHR vendor's service in these two areas is superior to the security and back-up system of past internal systems of the physician practice.

OVERALL RANK	Q16 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
2	1	TIETO	8.72	9.18	8.53	7.71	8.54
1	2	CAMBIO	7.79	8.34	9.05	8.44	8.41
3	3	EPIC SYSTEMS	8.60	8.64	7.91	8.40	8.39

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

EUROPE (SCANDINAVIA)

Support and customer care

Table 21: Account management provides an adequate amount of onsite administration and support to clients. There exists a formal EHR account management program that meets client needs. Media and clients reference this vendor as an EMHR services leader and top vendor correctly. Customer services and relationship satisfaction is manifested through significant flagship clients as well as smaller and newest customers similarly. Vendor provides appropriate number of accessible support and customer care personnel.

OVERALL RANK	Q17 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
2	1	TIETO	9.57	9.25	8.93	9.26	9.25
3	2	EPIC SYSTEMS	8.90	9.04	8.75	9.21	8.98
1	3	CAMBIO	9.53	8.95	8.64	8.37	8.87

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

EUROPE (SCANDINAVIA)

Best of breed technology and process improvement developments

Table 22: EHR management and related technology services are considered best of breed. EHR Vendor technology elevates customers via capabilities, equipment, processes, deliverables, professional staff, leadership, quality assurance and innovative initiatives. EHR services are delivered at or above current/former in-house service levels. Technology is current and relevant to exchanging health information among providers, as well as sufficiently offering patient access.

OVERALL RANK	Q18 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	CAMBIO	9.44	9.33	9.21	9.49	9.37
2	2	TIETO	8.37	8.39	8.32	8.53	8.40
3	3	EPIC SYSTEMS	6.98	7.55	6.79	7.67	7.25

Source: Black Book™ 2019



BLACK BOOK™
RESEARCH

Africa

Kenya

EHR Status

In 2012, International Training and Education Center for Health (I-TECH) designed and developed an EMR system, KenyaEMR, to support the care and treatment of HIV/AIDS. I-TECH supported the implementation of KenyaEMR in over 300 health facilities throughout Kenya, one of the largest open source EMR rollouts in Africa. Following the implementation of EMRs in health facilities with high HIV and AIDS burden, the government shared how the EMR system is used for collecting billing information, scheduling patient appointments, and enabling clinicians to conduct ad hoc queries.

I-TECH supports the use of the system through extensive capacity building of the health managers and through on-site training on system use, for mentors who then train other staff at the facility. The system provides a platform to conduct case-based surveillance of HIV/AIDS and other infectious diseases as efforts are geared toward data quality and data use.

Since 2009, I-TECH has collaborated with the Ministry of Health to standardize electronic health information systems in Kenya, streamlining data collection so that more accurate, complete, and accessible information is available to health care workers, leaders, and managers at all levels of the health system through establishing standards and guidelines for electronic exchange and integrating these into policy.

Other highlights stemming from Kenya's remodeling is the support of 449 data quality assessments on EMR data across over 173 health facilities. After data cleansing, data quality results improved on sites by up to 66%.

Another example is piloted automated indicator reporting between EMR systems and the District Health Information System 2 (DHIS2) with the aim to support electronic transmission of reporting from EMRs to DHIS2.

Moreover, this country supported the design and development of a national unique person identifier for pilot use in Homa Bay County of Nigeria.

Kenya's goal is to support the Ministry of Health, County Health Management Teams, and Service Delivery Partners in maintaining and using health information systems innovations.¹

Market Dynamics

Health outcomes have improved in Kenya since 2006. The burden of communicable diseases decreased but continues to prevail in the total disease burden in 2016, whereas the non-communicable disease burden increased. Health gains varied strikingly across counties, indicating targeted approaches for health policy are necessary.²

Over the past several decades, the Government of Kenya has developed strategic plans and frameworks to strengthen coordination between private facilities and nongovernmental organizations, provided clear guidelines on health information systems, integrated data collection and reporting tools, improved data flow, and improved feedback mechanisms at all levels.

Kenya has shown a strong interest in improving health IT performance, including mandating units in the government to improve the eHealth, providing standards and guidelines to counties through the Health Sector M&E Framework, and showing a keen interest in developing a scorecard to measure health IT performance. However, gaps and opportunities remain in which health information systems performance monitoring can be improved in policies and practices at the national and subnational levels.

Kenya's healthcare information system has several data sources that are being integrated with District Health Information System 2, the national platform for the management of routine health data. Sub counties, community health workers, and health facilities submit data that are aggregated at the county and national levels to the DHIS2. DHIS2 is the world's largest health management information system platform, in use by 67 low and middle-income countries or 30% of the world's population. With DHIS2 you can capture data on any type of device, including desktops, laptops, tablets, smartphones and feature phones. Similarly, most solutions provided by this healthcare system work-offline, enabling improved reach in locations with poor connectivity.³

Constraints

Although governance and coordination structures are in place to coordinate the health information system at the national level, these guidelines were not communicated to the county level. In addition, it has been pointed out that there may not be enough oversight of the counties in data collection. Data quality can improve by automating data entry at the lowest levels to reduce redundancy and errors when transferring data from the lower level, such as the facility or community level, to a higher level, such as the county level or the national health management information system.

Several health programs have integrated their data sources into District Health Information System 2, including the Malaria, HIV/AIDS, and Tuberculosis programs. The Kenya Medical Supplies Authority has developed a central platform for the electronic supply chain management system for all users from facilities, counties, and health programs so they can order, procure, and distribute drugs to facilities. However, other organizations reported difficulties in integrating their data, particularly with EMRs. The interoperability is not there. As of right now, anybody from any facility can use different software, whether it is standard or not standard. There is no ability to communicate to other systems.

Furthermore, in Kenya there are challenges in maintaining staff, having adequate training, and ensuring financial investment in health information systems. On top of that, having outdated equipment and the lack of an Internet connection prevent them from producing health information effectively. There are multiple computers at health facilities that are being used for different purposes, creating inefficiencies. Let's say you are employed at a certain healthcare facility, one day you have a computer that is possibly being used at 10% of its full potential. Then the next day you are in the same facility but are instructed to use another set of computers. This creates instability and wastes time.⁴

Opportunities

In 2007–2008 the Health Metrics Network supported an evaluation in Kenya which raised concerns over the low reporting rates and lack of a policy framework to guide health information system activities. In response, Kenya invested in policy development and implemented at national scale in September 2011 the computerized District Health Information System 2 that is now widely used across Africa (J6/assessing). DHIS2 lets you manage aggregate, routine data through a flexible data model. You can set up data elements, data entry forms, validation rules, indicators and reports in order to create a fully-fledged system for data management. DHIS2 has advanced features for data visualization, like GIS, charts, reports, and pivot tables which will bring meaning to your data.⁵

Improving the environment and information generation of the systems used will positively affect the data quality. Increasing communication among the national and county levels, coordinating among partners, improving training of HIE staff, and improving technology infrastructure to increase efficiency of equipment use and Internet connectivity will enable organizations to better access data and draw conclusions.

By improving these aspects and addressing these challenges, Kenya will strengthen the data quality and data use of the HIT.

There has also been increased commitment to training local scientists and encouraging research through programs such as Human Health and Heredity in Africa, which was recently established by the National Institute of Health and by Wellcome Trust. This initiative funds African scientists and local institutions to conduct basic research on the genomic and environmental bases of health issues prevalent within the continent.⁶

Citations

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Nigeria

EHR Status

At present, most hospitals in Nigeria still rely on the paper-based way of keeping health records of patients. This comes with a lot of challenges like inadequate physical space to keep the cards in case of high number of patients, inconsistency in handwriting of individuals, as well as vulnerability to attacks. Hence, there is a need to migrate to an electronic method of keeping medical records.

The rate of eHealth technology applications adoption is low. This is due in part, to barriers such as resistance from healthcare professionals, poor infrastructure, and low technical expertise. Nigeria had a population of 186 million in 2016 and the majority reside in remote rural and poor areas, where access to basic social amenities such as quality healthcare services, good roads, electricity supply, etc., is either poor or non-existent. According to statistics by the Nigeria Medical Association, there are over 45,000 medical doctors in Nigeria. This indicates a ratio of one doctor to 4,000 patients. Clearly, it represents a far cry from the recommendations of the WHO of one doctor to not more than 600 patients. In Nigeria, the Federal government has made efforts to develop and deploy e-health technology applications in hospitals to improve healthcare services. However, healthcare workers reported that they were not carried along in the planning process, and implementation is largely at pilot stages, uncoordinated, and yet to be scaled up due to lack of comprehensive e-health national policies and strategies. Other barriers to acceptance of e-health by the healthcare professionals include apathy in embracing ICT tools, and poor awareness of e-health advantages

Apart from the inaccessible rural areas in need of telemedicine solutions, the impact of brain drain, emigration of those highly trained or educated to other countries that provide more opportunity, is enormous. If such technology like telemedicine is appreciated and embraced, the effects of brain drain may be minimized, if not completely eradicated, because the skills of those experts are still available through remote technologies.

Some of the major hindrances to telemedicine, like infrastructure and power, seem to be improving in Nigeria. If the current momentum given to electricity by the present government continues, then hope is on the horizon.

The government and the stake holders should make sure that all government and private hospitals and healthcare institutions are equipped with enough information and communication equipment that will enable them to gradually swap from the old and stressful paper based patient record system to the fast, easy and secure EMR system.

Health workers (e.g. doctors, nurses, pharmacists, radiologists, laboratory technicians) with little or no computer knowledge should be encouraged across the board to embrace HIT related skills so that this technology can be more adaptable to their work. The Nigerian Medical and Dental Council is adding eHealth as part of the continuing medical education needed for license renewal. Thus, providing incentives and opportunities for clinicians and healthcare managers to acquire and update digital eHealth IT skills and knowledge.¹

Market Dynamics

With eHealth expanding its influence on healthcare management, the Healthcare Informatics Society of Nigeria (HISN) is one of the major groups establishing and highlighting the importance of information and communications technology in the clinical management of patients. Nigeria is witnessing continuing advocacy and increase in the number of individuals yearning for computerization of health information and healthcare processes. As expected,

there are still many challenges facing eHealth solutions in Nigeria, including fundamentals like internet connectivity and electric power. With the present national administration's commitment to improve eHealth knowledge and infrastructure shortages, eHealth should begin to gain ground and traction in Nigeria. The Government of this most populous black nation is evolving plans and strategies for the adoption and implementation of health information technology. Currently, a high-powered initiative is being established within the Nigerian Government through HISN to enhance a national policy on eHealth.

Despite the progress made, the prospects for an eHealth specialist in a developing country like Nigeria can seem very discouraging since many eHealth experts have emigrated from the region due to a lack of a promising career post-graduation. If this trend is not reversed through the active participation of major global eHealth stakeholders, the WHO's vision for 2030 of providing "universal affordable healthcare coverage" may be unachievable. Currently, a proposal is being worked on for 'universal affordable healthcare coverage through telemedicine'. Once accepted, the use of software such as a device, smart devices, and telemedicine kits, will enable automatic data acquisition. The issue of patient data safety, consent and confidentiality are also being taken very seriously.

Previous healthcare policies have not been able to deliver the expected outcomes in Nigeria because modern health information system tools have not been used to drive healthcare delivery solutions. This makes healthcare less affordable, inaccessible and unable to deliver value for the money.

It is an obvious fact that telemedicine solutions are in urgent need throughout Nigeria to address the continuing medical expert shortage problem, inclusive of eHealth experts. Remote villages are difficult to reach and eHealth education in Nigeria is still far below expectations. For example, most of the universities have yet to begin offering eHealth courses, as there are not enough students interested in enrolling. To address this lack, a distinct eHealth career path should be created and marketed to attract prospective students.

Presently, many hospitals are interested in EMRs, although no hospital or clinic has attained HIMSS Electronic Medical Record Adoption Model stage adoption grading to date. This reiterates that the field of health informatics is still very new in Nigeria and throughout Africa. Additionally, more and more vendors are showing interest in the Nigerian market, suggesting that things are improving.²

Constraints

Given that there is no distinct eHealth program, infrastructure, or dedicated personnel to drive the HISN, the possibility of getting reliable data is slim. Arguably, if the HISN is not functioning or is non-existent there is poor public health intelligence to drive policies.

Moreover, there are territories, mostly in rural areas, that expert medical personnel may not access, are unwilling to access, or the number of health care givers is inadequate based on available resources. To achieve universal and affordable healthcare, it is assumed that all territories should be coverable. A new, modern and technological driven policy is needed to ensure these areas are provided healthcare access.

Furthermore, evidence has shown that most healthcare practitioners trained in this developing country immigrate to developed nations due to poor welfare and outdated infrastructures. Viable, affordable and efficient telemedicine solutions should address this, since the expertise of these healthcare providers will still be accessible remotely. If this is not addressed, eHealth solutions may increase socioeconomic healthcare inequalities.¹

Opportunities

With the renewed efforts of HISN, a lot of positive institutional change is beginning to emerge in Nigeria. HISN continues to engage both the online and offline healthcare practitioners training in important information and communications technology health innovations. However, since there has been no official governmental support, progress has been slow, which is mostly attributed to financial constraints. The trainings offered have been free for the students, with most expenses covered by HISN members, making sustainability very challenging. Hopefully, this trend will continue progressing and gain funding from the government or other eHealth organizations, and more courses and training will be available to healthcare practitioners in Nigeria.

A number of improvements were incorporated into the HISN program and training for 2018. For example, each state was mandated to hold state and regional conferences, while the national eHealth conference was held in Lagos towards the end of 2018. These conferences, especially the national one, will draw many key stakeholders and are sure to create broader awareness on eHealth innovations. Many international vendors were present in hopes of networking and collaborating. This is a great improvement, considering it has been three years since a similar conference was held, most likely due to insufficient local eHealth experts, though this is gradually improving. In the very near future, health information technology is poised to be a rewarding career in Nigeria and other developing countries, if the renewed momentum generated in the field is sustained.²

Citations

¹Funmilola, Ajala, Awokola Jinmisayo, and Emuoyibofarhe Ozichi. *Development of an EMR System for a Typical Nigerian Hospital*. Nigeria, 2015. Web. 28 May 2019. <https://pdfs.semanticscholar.org/71b0/f7fe26d54824f3e1c3901c112f2a312f27cb.pdf>

²Taiwo, Adeleke, et. al. *Health Information Technology in Nigeria: Stakeholders' perspectives of nationwide implementations and meaningful use of the emerging technology in the most populous black nation*. Nigeria, 2014. Web. 28 May 2019. https://www.researchgate.net/publication/269572805_Health_information_technology_in_Nigeria_Stakeholders'_perspectives_of_nationwide_implementation_and_meaningful_use_of_the_emerging_technology_in_the_most_populous_black_nation

AFRICA

2019 EHR SURVEY RESPONSE RATES BY PRACTICE/ORGANIZATION TYPE, VALIDATED SYSTEM USERS 160 RESPONDENTS

2019 SURVEY RESPONDENT IDENTIFICATION	PERCENT OF TOTAL RESPONSES
Physician/Clinician Name	9%
Clinic/Practice Name	19%
Public Clinic	21%
Health System Clinic	11%
Academic Hospital and Medical Centers over 250 Beds	25%
Community Hospitals	7%
Small Hospitals under 100 Beds	0%
Ambulatory Surgery Centers	8%
TOTAL	100%

Source: Black Book™ 2019

2019 RESULTS

ELECTRONIC HEALTH RECORDS & PRACTICE TECHNOLOGY



HEALTH INFORMATION SYSTEMS

STOP LIGHT SCORING KEY

2019 TOP OVERALL AMBULATORY EHR EMR HIT VENDOR HONORS

AFRICA

CERNER

FUNCTIONAL SUBSET HONORS: TOP VENDORS FOR AFRICA

TOP VENDOR: PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING

INTERSYSTEMS

TOP VENDOR: INTEROPERABILITY, COMMUNICATIONS AND CONNECTIVITY

CERNER

TOP VENDOR: ORDER ENTRY AND MANAGEMENT

INTERSYSTEMS

TOP VENDOR: RESULTS REVIEW/MANAGEMENT AND DECISION SUPPORT

MIMSYS

STOP LIGHT SCORING KEY

FIGURE 1: COMPREHENSIVE END-TO-END EMR VENDORS ARE DEFINED AS BEING COMPRISED OF FOUR SURVEYED FUNCTIONS

PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & INTEROPERABILITY, CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/MANAGEMENT
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Source: Black Book Research

FIGURE 2: KEY TO RAW SCORES

0.00 – 5.79 ▶	◀ 5.80 – 7.32 ▶	◀ 7.33 – 8.70 ▶	◀ 8.71 – 10.00
Deal breaking dissatisfaction	Neutral	Satisfactory performance	Overwhelming satisfaction
Does not meet expectations	Meets/does not meet expectations consistently	Meets expectations	Exceeds expectations
CANNOT RECOMMEND VENDOR	WOULD NOT LIKELY RECOMMEND VENDOR	RECOMMENDS VENDOR	HIGHLY RECOMMENDED VENDOR

Source: Black Book Research

STOP LIGHT SCORING KEY

FIGURE 3: COLOR-CODED STOP LIGHT DASHBOARD SCORING KEY	
Green 8.71 +	(Top 10%) scores better than 90% of EHR vendors. Green coded vendors have received constantly highest client satisfaction scores.
Clear	(Top 33%) scores better than 67% of EHR vendors. Well-scored vendor which have middle of the pack results.
Yellow 5.80 to 7.32	Scores better than half of EHR vendors. Cautionary performance scores, areas of improvement required.
Red Less than 5.79	Scores worse than 66% of EHR vendors. Poor performances reported potential cause for contract cancellations.

Source: Black Book Research

STOP LIGHT SCORING KEY

FIGURE 4: RAW SCORE COMPILATION AND SCALE OF REFERENCE

Black Book raw score scales

1 = Deal breaking dissatisfaction ◀ ▶ **10 = Exceeds all expectations**

Source: Black Book Research

Individual vendors can be examined by specific indicators on each of the main functions of EHR vendors as well as grouped and summarized subsets. Details of each subset are contained so that each vendor may be analyzed by function and end-to-end EHR services collectively.

STOP LIGHT SCORING KEY

FIGURE 5: SCORING KEY							
OVERALL RANK	Q1 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIO NS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
5	1	EHR NAME	8.49	8.63	8.50	8.01	8.66

Source: Black Book Research

- **Overall rank** – this rank references the final position of all 18 criteria averaged by the mean score collectively. This vendor ranked fifth of the 20 competitors.
- **Criteria rank** – refers to the number of the question or criteria surveyed. This is the sixth question of the 18 criteria of which this vendor ranked first of the 20 vendors analyzed positioned only on this particular criteria or question. Each vendor required ten unique client ballots validated to be included in the top ten ranks.
- **Company** – name of the EHR vendor.
- **Subsections** – each subset comprises one-fourth of the total EHR vendor mean at the end of this row and includes all buyers and users who indicate that they contract each respective EMR functional subsection with the supplier, specific to their physician enterprise.
- **Mean** – congruent with the criteria rank, the mean is a calculation of all three subsets of EHR functions surveyed. As a final ranking reference, it includes all market sizes, specialties, delivery sites and geographies.

OVERALL KPI LEADERS

AFRICA

Summary of criteria outcomes

TABLE 1: SUMMARY OF CRITERIA OUTCOMES		
Total number one criteria ranks	Vendor	Overall rank
12	CERNER	1
3	INTERSYSTEMS	2
3	EPIC SYSTEMS	3

Source: Black Book Research

OVERALL KPI LEADERS: AMBULATORY EHR

AFRICA

Top score per individual criteria

TABLE 2: TOP SCORE PER INDIVIDUAL CRITERIA

Questions	Criteria	EHR Vendor	Overall
1	Strategic Alignment of Client Goals	CERNER	1
2	Innovation & Optimization	CERNER	1
3	Training	EPIC	3
4	Client relationships and cultural fit	EPIC	3
5	Trust, Accountability, Transparency, Ethics	CERNER	1
6	Breadth of offerings, client types, delivery excellence	INTERSYSTEMS	2
7	Deployment and outsourcing implementation	INTERSYSTEMS	2
8	Customization	CERNER	1
9	Integration and interfaces	CERNER	1
10	Scalability, client adaptability, flexible pricing	INTERSYSTEMS	2
11	Compensation and employee performance	CERNER	1
12	Reliability	CERNER	1
13	Brand image and marketing communications	CERNER	1
14	Marginal value adds and modules	CERNER	1
15	Financial & Managerial Viability	EPIC	3
16	Data security and backup services	CERNER	1
17	Support and customer care	CERNER	1
18	Best of breed technology and process improvement	CERNER	1

INDIVIDUAL EHR VENDOR KEY PERFORMANCE INDIVIDUAL EHR VENDOR KEY PERFORMANCE

KEY

A = 90% Agree
 B = 75% Agree
 C = 50% Agree
 D = 25% or Less Agree

RANK	EHR VENDOR AFRICA	DELIVERED ON EXPECTATIONS	IMPLEMENTATION ON TIME	TOTAL COST OF OWNERSHIP ON BUDGET
1	CERNER	C	A	C
2	EPIC SYSTEMS	A	D	D
3	INTERSYSTEMS	B	B	C
4	DXC	C	C	B
5	MIMSYS	C	C	C
6	HEALTH INSIGHTS MEDICAPLUS	C	C	C

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

AFRICA

Strategic Alignment of Vendor Offerings to Physician Practice Goals & Client's Mission

Table 5: Organizational structure meets the needs of stakeholders or customers and stakeholder satisfaction is the most important priority. EHR client is likely to recommend the vendor to similar sized physician groups, physicians within the same specialty or delivery setting.

OVERALL RANK	Q1 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	CERNER	9.65	9.59	9.89	9.77	9.73
3	2	EPIC SYSTEMS	9.67	9.06	9.52	9.30	9.39
2	3	INTERSYSTEMS	8.81	8.97	8.95	8.64	8.84

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

AFRICA

Innovation and Optimization

Table 6: Customers are also continuing to push the envelope for further enhancements to which the EHR vendor is responsive. EHR clients also believe that their vendors' technology is helping them manage practices more effectively, generate accurate records and reimbursement billings and cut their overhead in ways that were difficult or impossible to accomplish before electronic medical records were implemented. Vendor is responsive to make client recommendations with cutting edge improvements.

OVERALL RANK	Q2 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	CERNER	8.51	9.21	8.98	8.61	8.83
2	2	INTERSYSTEMS	9.30	9.17	8.44	8.19	8.78
3	3	EPIC SYSTEMS	9.13	9.09	7.83	8.71	8.69

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

AFRICA

Training

Table 7: Electronic medical and health record vendor leadership provides significant and meaningful training opportunities for internal employees and client staff. Leadership strives to develop technology staff, EMR/EHR client service and customer servicing consultant employees. Training modules are effective and practical so that minimal post-implementation training is required on or off site. Regular updates are timely and require minimal additional training to implement.

OVERALL RANK	Q3 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
3	1	EPIC SYSTEMS	8.64	9.35	8.49	8.69	8.79
2	2	INTERSYSTEMS	8.33	8.85	9.42	8.21	8.70
1	3	CERNER	6.92	8.06	8.77	8.20	8.09

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

AFRICA

Client relationships and cultural fit

Table 8: EHR vendor leadership honors customer relationships highly. The relationship with the EHR elevates the customer reputation. Improving physician practice and healthcare delivery efficiency and effectiveness is a priority of the supplier. Governance of engagement is neither complex for buyer nor does it require vendor management attention regularly. There is no regular transparency or quality issue. There are no culture clashes or misfits that threaten relationship's success or client's satisfaction.

OVERALL RANK	Q4 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
3	1	EPIC SYSTEMS	9.47	9.22	8.95	9.62	9.32
1	2	CERNER	9.60	8.87	9.44	9.22	9.28
2	3	INTERSYSTEMS	8.44	8.92	9.11	8.57	8.76

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

AFRICA

Trust, Accountability, Ethics and Transparency

Table 9: Trust in enterprise reputation is important to EHR clients as well as prospects. Client possesses an understanding that its EHR organization has the people, processes, and resources to effectively deliver the desired business and clinical results, based on its industry reputation and past performance. There are no disconnects between promises and delivery.

OVERALL RANK	Q5 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	CERNER	9.49	9.58	9.92	9.46	9.61
3	2	INTERSYSTEMS	9.80	9.51	8.84	9.53	9.42
2	3	EPIC SYSTEMS	7.97	6.15	7.10	7.40	7.16

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

AFRICA

Breadth of offerings, varied client settings, delivery excellence across all user types

Table 10: EMR/EHR vendor offers industry recognized horizontal functionality and vertical industry applications and manage bundled EMR services such as ePrescribing and developing new e-Health initiatives. Vendor routinely drives operational performance improvements and results in the areas they affect. Comprehensive offerings are constructed to meet the unique needs of the client’s EHR initiatives. Breadth of vendor modules offers comprehensive system services and broad modules.

OVERALL RANK	Q6 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
			MANAGEMENT & ADMINISTRATIVE PROCESSING				
2	1	INTERSYSTEMS	8.68	8.77	8.80	8.96	8.80
1	2	CERNER	7.89	8.96	8.94	9.00	8.70
3	3	EPIC SYSTEMS	8.23	8.80	8.81	8.93	8.69

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

AFRICA

Deployment and EHR implementation

Table 11: EHR client deploys at a pace acceptable to the client. EHR solutions eliminate excessive supervision over vendor implementations. Vendor overcomes client implementation obstacles and challenges effectively. Technical, organizational and cultural implementation obstacles are handled professionally and punctually. EHR implementation time meets standard expectations. Implementations are efficient and sensitive to users' specific situations which may cause delays.

OVERALL RANK	Q7 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
2	1	INTERSYSTEMS	8.37	8.76	8.33	9.00	8.62
1	2	CERNER	8.04	8.57	9.29	8.09	8.50
3	3	EPIC SYSTEMS	7.02	6.87	8.06	7.10	7.26

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

AFRICA

Customization

Table 12: EHR products and process services are customized to meet the unique needs of specific practice client purpose, processes and physician models. Little resistance is encountered when changing performance measurements as clients' needs vary. Extraordinary efforts are made to adapt and convert client special needs into workable solutions with efficient cost and time considerations. EMR software allows for modifications that are not costly or complex.

OVERALL RANK	Q8 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	CERNER	9.65	9.92	9.63	9.58	9.70
3	2	EPIC SYSTEMS	9.26	9.66	9.38	9.69	9.50
2	3	INTERSYSTEMS	8.09	8.96	8.06	9.14	8.56

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

AFRICA

Integration and interfaces

Table 13: EHR vendor supports interfaces so information can be shared between necessary applications. Solutions are easily integrated to existing backend systems as needed and HIE feasible. Seamless interfaces to legacy applications are performed as required for optimal functioning. Human integration and interface activities are administered precisely. Systems communicate effectively among provider groups and ancillaries. True interoperability with other healthcare organizations is factored into implementation.

OVERALL RANK	Q9 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	CERNER	9.91	9.69	9.64	9.60	9.71
2	2	INTERSYSTEMS	9.41	9.20	9.08	8.91	9.15
3	3	EPIC SYSTEMS	6.90	7.67	7.29	6.89	7.19

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

AFRICA

Scalability, client adaptability, flexible pricing

Table 14: EHR services and solutions vendor provides flexible pricing allowing the client to choose and pay for the precise functionality and services needed. Vendor invests in significant infrastructure and has the ability to provide services to enterprise organizations. IT products and services meet the changing and varied needs of the EHR customer. Pricing is not rigid or shifting and meets needs of client.

OVERALL RANK	Q10 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
2	1	INTERSYSTEMS	8.62	8.92	8.96	8.99	8.87
1	2	CERNER	7.50	9.02	7.93	8.97	8.36
3	3	EPIC SYSTEMS	6.99	7.09	7.70	7.08	7.22

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

AFRICA

Vendor staff expertise, compensation and employee performance

Table 15: EHR vendor team of employees is considered top in industry for professionalism and skill. Vendor attracts and retains high performing staff. Vendor is focused on building and developing a strong employee team of producers. Employees act like owners/leaders. Company is moving towards leveraged pay at all levels. Vendor is using effective tools to tie performance metrics to compensation policy and compensating top leaders. Human resources-related criteria are scored from the client perspective on this indicator.

OVERALL RANK	Q11 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	CERNER	9.28	9.66	9.88	9.82	9.66
2	2	INTERSYSTEMS	9.76	8.90	9.17	9.03	9.22
3	3	EPIC SYSTEMS	8.99	8.80	9.10	9.02	8.98

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

AFRICA

Reliability

Table 16: EHR supplier meets agreed terms as evidenced by routine, acceptable service level reporting and industry expectations. Depth and breadth of applications/solutions are acceptable in meeting client needs. Online reliability meets expectations and outages/downtimes are minimized. Solid product and service capacities are demonstrated consistently. Service levels are consistently met as agreed. Services and support response is expedient and resources are appropriately provided by vendor team.

OVERALL RANK	Q12 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	CERNER	8.88	8.85	8.11	8.68	8.63
2	2	INTERSYSTEMS	8.10	8.41	8.35	8.95	8.45
3	3	EPIC SYSTEMS	6.31	7.11	7.22	7.14	6.95

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

AFRICA

Brand image and marketing communications

Table 17: EHR vendor’s marketing and sales statements/pitches are accurately and appropriately represented by actual EMR product and service deliverables. Image is consistent with top EHR rankings. Sales presentations and proposals are delivered upon and corporate integrity/honesty in marketing and business development are highly valued. Company image and integrity are values upheld top-down consistently. Elevated level of relevant client communications enhances the EHR vendor – EHR user relationship.

OVERALL RANK	Q13 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	CERNER	9.26	9.79	9.08	9.50	9.41
2	2	INTERSYSTEMS	9.00	9.26	9.28	8.96	9.13
3	3	EPIC SYSTEMS	9.21	8.50	9.60	8.69	9.00

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

AFRICA

Marginal value adds

Table 18: Beyond stimulus achievement, EHR vendors' cost savings are realized as generally estimated and not over-positioned or over/underestimated in ways that effect major client satisfaction or costs. Vendor offers value-adds as a practice management partner in cost savings and avoidance initiatives and creative programs through bundled EMR product design. Provides true business transformation opportunities to physician practices and other medical settings utilizing EHR.

OVERALL RANK	Q14 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	CERNER	8.10	7.19	5.96	6.52	6.94
3	2	EPIC SYSTEMS	5.94	6.30	5.61	7.73	6.40
2	3	INTERSYSTEMS	5.99	5.88	6.08	5.20	5.79

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

AFRICA

Viability and managerial stability

Table 19: Vendor’s viability, employee turnover, financial stability and/or cultural mismatches do not threaten relationship. Senior management and the board exemplify strong leadership principals to steward appropriate resources that impact EHR buyers. Client is confident of long term industry viability for this vendor based on investments, client adoption, exceptional outcomes and service levels. Field management is notably competent, stable and supportive of clients. EHR vendor demonstrates and provides evidence of competent fiscal management and leadership.

OVERALL RANK	Q15 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
3	1	EPIC SYSTEMS	9.44	9.14	9.47	9.10	9.29
1	2	CERNER	8.32	8.01	8.74	7.21	8.07
2	3	INTERSYSTEMS	7.53	7.91	8.43	8.11	8.00

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

AFRICA

Data security and backup services

Table 20: In order to provide secure and constantly dependable EMR service offerings for physician and hospital/IDN affiliate practices and entities, an EHR vendor has to provide the highest level of security and data back-up services. EHR vendor's service in these two areas is superior to the security and back-up system of past internal systems of the physician practice.

OVERALL RANK	Q16 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	CERNER	9.01	9.65	9.57	9.13	9.34
2	2	INTERSYSTEMS	9.35	9.65	9.14	9.15	9.32
3	3	EPIC SYSTEMS	9.15	9.44	8.94	9.56	9.27

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

AFRICA

Support and customer care

Table 21: Account management provides an adequate amount of onsite administration and support to clients. There exists a formal EHR account management program that meets client needs. Media and clients reference this vendor as an EMHR services leader and top vendor correctly. Customer services and relationship satisfaction is manifested through significant flagship clients as well as smaller and newest customers similarly. Vendor provides appropriate number of accessible support and customer care personnel.

OVERALL RANK	Q17 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	CERNER	9.87	8.60	9.13	9.40	9.25
2	2	INTERSYSTEMS	8.20	8.27	8.60	9.11	8.55
3	3	EPIC SYSTEMS	7.68	6.10	6.08	6.28	6.54

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

AFRICA

Best of breed technology and process improvement developments

Table 22: EHR management and related technology services are considered best of breed. EHR Vendor technology elevates customers via capabilities, equipment, processes, deliverables, professional staff, leadership, quality assurance and innovative initiatives. EHR services are delivered at or above current/former in-house service levels. Technology is current and relevant to exchanging health information among providers, as well as sufficiently offering patient access.

OVERALL RANK	Q18 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	CERNER	8.13	9.56	9.13	9.56	9.10
3	2	EPIC SYSTEMS	6.93	7.91	8.91	7.43	7.80
2	3	INTERSYSTEMS	7.23	8.14	7.16	6.11	7.26

Source: Black Book™ 2019



BLACK BOOK™
RESEARCH

Oceania

Australia

EHR Status

In practical terms, eHealth is the means of ensuring that the right health information is provided to the right person at the right place and time in a secure, electronic form for the purpose of optimizing the quality and efficiency of health care delivery. According to a report by Global Market Insights, the EHR market size in Australia was valued at US \$526.3 million in 2018 and is expected to witness over 8.5% in exponential growth rate (CAGR) from 2019 to 2025. Specifically, the web/cloud-based EHR software product market is expected to have large uptake. It was valued at US \$12.5 billion in 2018.

The healthcare system in Australia is equipped with the necessary infrastructure to launch a national EHR program as 85% of Australians and over 95% of general practitioners have access to the internet.

Government initiatives such as My Health Record, aimed at maintaining the health records of all the Australian citizens will also drive growth of various digital health systems platforms in the country. Along with the strong growth rate of EHR, there is also a lack of skilled professionals to handle the sophisticated technology. As such, they urged the healthcare industry to prepare for this change.

Similarly, they warned that the potential threats for data breaches and privacy leaks will continue to impede the Australian EHR market growth over the coming years.¹

Market Dynamics

Australia's health system is highly respected internationally for its effectiveness and efficiency. It has made steady inroads in implementing digital health solutions. By the end of 2018, a My Health Record will be created for every Australian, except those who choose not to have one. This in turn will ensure that the great majority of Australian patients will accrue a comprehensive, accessible medical history, which can become a vital resource for clinical interventions and ongoing health management. Healthcare providers can use the My Health Record system and associated digital health infrastructure to share health information with their patients, transfer prescriptions to pharmacies, and provide interactive decision-making support. Consumers can take a proactive and participatory approach to their healthcare by adding personal notes and controlling the information displayed in their personal record.

An implementation plan was created to outline the roles and activities for government, healthcare providers, the technology industry, consumers, and researchers to contribute to achieving the digital health goals by 2022. Key themes that will guide the approach to delivery of digital health within Australia is to help all the people who care for the patient understand them, and together, provide safe and personalized care. In addition to, creating an environment where healthcare providers and the patient can use and benefit from innovative technologies. But above all, preserve the users trust in the healthcare system and protect their rights.

Despite strong foundations, a number of demographic and health trends are stretching the financial, physical and human resources of our healthcare system. These factors include an ageing population and increasing rates of chronic disease, compounded by systemic issues such as challenges in maintaining a skilled workforce in light of new technologies, and inequalities in health outcomes across different communities.

Consequently, there is increasing need for healthcare reform to prepare Australia to respond to the emerging health needs of its communities and to maintain existing high standards. This reform includes, among other things, the funding and large-scale adoption of digital health technologies to support new and improved models of care that drive greater safety, quality and efficiency for Australian patients and their care givers.²

Constraints

Australia, like many industrialized countries, will confront major issues and challenges over the next decade in maintaining and improving patient health care. The following are the major core health issues and challenges that the country will need to address.

Technology and technological breakthroughs have improved the lives of patients in terms of diagnostics and the management serious diseases in the 21st century. However, the continual cost and diffusion of technology will impose serious budgetary constraints in maintaining and improving health care. Health care technology and the specific types of medical systems have increased the burden on government budgets. The challenge will be to use technologies that not only improve the health and well-being of citizens but are also cost-effective treatments.

Generally speaking, the main risks to the My Health Record program are factors that could discourage the use of these digital health services in Australia's healthcare system. Such factors include a lack of awareness of the My Health Record system and other digital health services, or a loss of faith among clinicians and consumers in these services, perhaps due to privacy or security concerns, or a perception of general irrelevance to grassroots healthcare delivery.

There have been huge improvements in the health outcomes in Australia, as measured by increased life expectancy, lower mortality rates, more efficient disease management controls, among others. However, this has not been shared equally across groups. For example, the life expectancy of the indigenous population is significantly lower than the non-indigenous population. There is also a significant difference with the health care treatment that affluent people receive versus the less affluent.³

Opportunities

To capitalize on this once in a generation opportunity, Australia should embark on a strategy of national eHealth coordination and alignment. National action should be focused in four key areas:

- Implementing the national 'health information highway' infrastructure and rules to allow information to be seamlessly accessed and shared across the Australian health system
- Stimulating investment in high priority computer systems and tools that can deliver tangible benefits to Australian consumers, care providers and health care managers
- Encouraging health sector participants to adopt and use high priority systems and tools as they become available
- Establishing an E-Health governance regime to enable effective coordination and oversight of national E-Health activities.

This would involve the establishment of national frameworks and infrastructural components that can be leveraged at national, regional, and local levels to deliver solutions that are able to be integrated and share data across geographic and health sector boundaries.⁴

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New Zealand

EHR Status

Implementation of EHRs could provide wider benefits to clinicians, patients, and healthcare managers as well as enhance healthcare delivery systems. Benefits of EHRs could be classified into clinical, organizational and societal outcomes. Improved quality of care and patient safety are the key clinical outcomes associated with using EHRs. Some reported advantages of EHRs include: improved legibility of clinical notes, accessible information, computerized reminders to physicians, standardized care reduced clinical investigations, reduced medication errors, and low mortality rates associated with reduced medical complications. Ultimately, this has been shown to improve the quality and patient safety.

The cost associated with implementation, converting paper charts to electronic one, and the maintenance work associated with software up-gradation, ongoing training support needs are the reported barriers to successfully implement EHRs. Furthermore, disruption of the normal workflow, temporary loss of productivity and increased the risk of patient privacy violations, lack of interoperability standards between EHRs also poses the challenge to successfully implement EHRs. The emergence of new standards for exchanging, integrating, sharing and retrieving information has facilitated implementing EHRs in New Zealand.

In 1992 the Ministry of Health introduced National Health Identifier (NHI). It is a unique identifier assigned to every person who uses health and disability support services in New Zealand to make an error-free identification. This NHI is associated to medical warnings systems, which warns health professional about any risk factors when making a clinical decision with an individual patient. Every health provider is uniquely identified by Health Provider Index to enable secure ways to access and transfer health information.

Fourteen percent of GP practices with a patient portal are offering patients online access to their medical notes. Latest figures from the Ministry of Health show that 610 practices out of 970 across New Zealand offer a patient portal. Having access to their health information empowers people to be more involved in their healthcare. On a practical level, portals can help them understand their health condition better, and remind them of their care plan and their medications. The Ministry figures show that four physician-hospital organizations have all practices offering a portal and around 800,000 people are registered with a patient portal across the country. Twenty-one practices now also offer video-conference consults.

Initiatives such as NHI, health provider index, and the medical warnings systems, a national clinical terminology, early adoption of integrated healthcare, and the national health information privacy code provided the building blocks for the national EHR implementation. EHR architecture shares information, either on a need-to-know basis or limits data access to providers within the "circle of care". Some of the well-functioning regional EHRs are Primary Information Systems Management (PRISM). With the consumer in mind, developers designed the single national EHR to turn data into meaningful information. This single EHR could consolidate information to improve decision support and patient care coordination for patients with chronic health conditions.¹

Market Dynamics

New Zealand's health sector has increasing demands in the ageing population and ongoing inflation of medical costs. These demands are growing, and the importance of technology could optimize the healthcare sector performance. Advancement in technology drives EHRs implementation to add substantial value to health delivery systems. The investment and promotion of health information infrastructure have positioned New Zealand as a world leader in the field of primary care sector. Factors such as organization structure, culture, leadership and workflow design are important to achieving successful implementation of EHRs.

This country is similar to the United States of America in that there are strict guidelines for the protection and sharing of electronic medical information. In the USA they are directed by the Health Insurance Portability and Accountability Act (HIPAA). In New Zealand, the Privacy act of 1993 and Health Information Privacy code of 1994, governs the collection, usage, and disclosure of medical information. The National Health IT Board established Connected Health Programs, to share secure health information between health professionals.

Moreover, the Ministry of Health developed Digital Health 2020 which was established to progress the core digital technologies presented in the New Zealand Health Strategy. It guides the strategic digital investments that are expected to occur across the health and disability sector in the next five years, 2016–2020. It will also align sector investment with value delivery and encourage health organizations to invest with greater clarity and confidence.

It has five core components:

- an electronic health record for New Zealanders: a single longitudinal view of health information accessible to consumers, care givers and decision-makers.
- health and wellness dataset - access to health data to support government, health organizations and individuals to make evidence-based decisions aligned to the Government's social investment approach.
- a preventative health IT capability - information and enabling ICT capability to support and improve the targeting of screening, immunization and other public health initiatives.
- digital hospitals - to lift the digital capability within hospitals and the integration with the wider sector.
- regional IT foundations - eHealth foundations that support regional access to health information, delivery of the single electronic health record and lifting digital capability within hospitals.

These actions will ultimately contribute to the stated goal that "... all New Zealanders live well, stay well, get well, in a system that is people-powered, provides services closer to home, is designed for value and high performance, and works as one team."²

The investment and promotion of health information infrastructure have positioned New Zealand as a world leader in the field of primary care sector. But a system-wide approach to managing the electronic health information across the health sector is currently in early stages in New Zealand. Despite having unique identifiers such as the national health identifier and the health provider index, it remains a challenge to merge data from different systems and aggregate into useful information. This relates to poor data quality and reduced patient outcomes as it lacks management, reporting, and analytical capabilities. Some of the regional and national initiatives that consolidate the information offer a promising prospect for further consolidating the information. This could progress the ability to integrate the health information to implement the single EHR system at New Zealand. The well-developed electronic medical record foundation in New Zealand puts it on par with most of the countries across the world. Leadership and the governance models could standardize the clinical workflow and would contribute towards a successful implementation of single national EHR. Such an implementation could improve decision support and foster patient care coordination for the health and wellbeing of citizens in New Zealand.²

Constraints

Findings from a new study show that some physicians receive more than 100 notifications per day via EHR-based inboxes and dealing with this electronic burden requires more than an hour every day. Excessive EHR-based notifications can overburden physicians, and lead to potentially disastrous consequences. Unmanageable numbers of alerts not only make it difficult for physicians to filter out important information but also increase the chances that physicians will miss patient's test results.

Another fault in this country's health system relates to mobile phone applications. Figure 1 is currently the most prominent app enabling healthcare providers to share patient images, although many other platforms exist. According to its website, Figure 1 has over one million users internationally. It is freely available for anyone to download and enables users to upload photographic and radiological images for other users to view. Explanatory notes, observations or questions can be added. Users who self-identify as healthcare providers, including nursing and medical students, can leave comments about images.

Image-sharing apps and social media sites that allow image sharing raise issues about patient confidentiality, privacy, consent and what is permissible and expected within the provider-patient relationship. New Zealand has established professional guidelines and legal mechanisms that set expectations for how healthcare providers treat patient information, including the use and dissemination of images.

This policy applies the principles contained in the Code of Health and Disability Services Consumers' Rights 1996 and the Health Information Privacy Code (HIPIC) of 1994 to the taking and sharing of photographic and radiological images of patients.

The HIPIC was written before image-sharing apps emerged, and thus does not directly address them. In the absence of specific guidance, providers contemplating uploading images on any electronic site must interpret how the HIPIC's rules apply to their proposed practice.

Governments should listen to people, technology companies, drug producers, and healthcare providers to shape policy according to real needs while keeping pace with innovation.³

Opportunities

New Zealand's Ministry of Health is going to gather this summer to get approval to develop a detailed business case for a national Health Information Platform, a major opportunity. It will empower patients to self-manage their wellbeing and improve data driven healthcare. The Ministry has been pondering off moving away from the idea of building a single EHR, towards developing a national health provider index that will enable data about a single patient to be shared.

The plan to build a national EHR was expected to take three to five years when first announced by government at the Health Informatics New Zealand 2015 conference.

Interoperability is core to the new platform, which will have the ability to assemble a virtual electronic record on an 'as required' basis from multiple trusted sources and provide access to data and services. The national Health Information Platform will be a key enabler for real-time clinical decision support.

In order to move from an episodic model of care to a wellbeing model the country need to get patients really and truly engaged. This includes the need for social license to use patient data to inform decisions about the system. As of right now the current way they are doing things in healthcare is not sustainable.⁴

Citations

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AUSTRALIA/NEW ZEALAND/INDONESIA

2019 EHR SURVEY RESPONSE RATES BY PRACTICE/ORGANIZATION TYPE, VALIDATED SYSTEM USERS

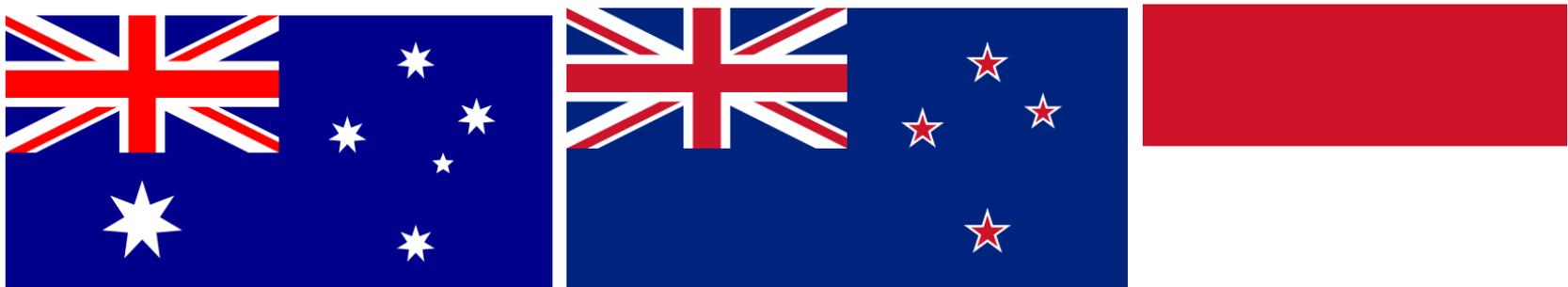
511 RESPONDENTS

2019 SURVEY RESPONDENT IDENTIFICATION	PERCENT OF TOTAL RESPONSES
Physician/Clinician Name	15%
Clinic/Practice Name	26%
Public Clinic	13%
Health System Clinic	12%
Academic Hospital and Medical Centers over 250 Beds	15%
Community Hospitals	4%
Small Hospitals under 100 Beds	0%
Ambulatory Surgery Centers	15%
TOTAL	100%

Source: Black Book™ 2019

2019 RESULTS

ELECTRONIC HEALTH RECORDS & PRACTICE TECHNOLOGY



HEALTH INFORMATION SYSTEMS

STOP LIGHT SCORING KEY

2019 TOP OVERALL AMBULATORY EHR EMR HIT VENDOR HONORS

AUSTRALIA/NEW ZEALAND/INDONESIA

ALLSCRIPTS

FUNCTIONAL SUBSET HONORS: TOP VENDORS FOR AUSTRALIA/NEW ZEALAND

TOP VENDOR: PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING

ALLSCRIPTS

TOP VENDOR: INTEROPERABILITY, COMMUNICATIONS AND CONNECTIVITY

CERNER

TOP VENDOR: ORDER ENTRY AND MANAGEMENT

ALLSCRIPTS

TOP VENDOR: RESULTS REVIEW/MANAGEMENT AND DECISION SUPPORT

INTERSYSTEMS

STOP LIGHT SCORING KEY

FIGURE 1: COMPREHENSIVE END-TO-END EMR VENDORS ARE DEFINED AS BEING COMPRISED OF FOUR SURVEYED FUNCTIONS

PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & INTEROPERABILITY, CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/MANAGEMENT
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Source: Black Book Research

FIGURE 2: KEY TO RAW SCORES

0.00 – 5.79 ▶	◀ 5.80 – 7.32 ▶	◀ 7.33 – 8.70 ▶	◀ 8.71 – 10.00
Deal breaking dissatisfaction	Neutral	Satisfactory performance	Overwhelming satisfaction
Does not meet expectations	Meets/does not meet expectations consistently	Meets expectations	Exceeds expectations
CANNOT RECOMMEND VENDOR	WOULD NOT LIKELY RECOMMEND VENDOR	RECOMMENDS VENDOR	HIGHLY RECOMMENDED VENDOR

Source: Black Book Research

STOP LIGHT SCORING KEY

FIGURE 3: COLOR-CODED STOP LIGHT DASHBOARD SCORING KEY	
Green 8.71 +	(Top 10%) scores better than 90% of EHR vendors. Green coded vendors have received constantly highest client satisfaction scores.
Clear	(Top 33%) scores better than 67% of EHR vendors. Well-scored vendor which have middle of the pack results.
Yellow 5.80 to 7.32	Scores better than half of EHR vendors. Cautionary performance scores, areas of improvement required.
Red Less than 5.79	Scores worse than 66% of EHR vendors. Poor performances reported potential cause for contract cancellations.

Source: Black Book Research

STOP LIGHT SCORING KEY

FIGURE 4: RAW SCORE COMPILATION AND SCALE OF REFERENCE

Black Book raw score scales

1 = Deal breaking dissatisfaction ◀ ▶ **10 = Exceeds all expectations**

Source: Black Book Research

Individual vendors can be examined by specific indicators on each of the main functions of EHR vendors as well as grouped and summarized subsets. Details of each subset are contained so that each vendor may be analyzed by function and end-to-end EHR services collectively.

STOP LIGHT SCORING KEY

FIGURE 5: SCORING KEY							
OVERALL RANK	Q1 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIO NS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
5	1	EHR NAME	8.49	8.63	8.50	8.01	8.66

Source: Black Book Research

- **Overall rank** – this rank references the final position of all 18 criteria averaged by the mean score collectively. This vendor ranked fifth of the 20 competitors.
- **Criteria rank** – refers to the number of the question or criteria surveyed. This is the sixth question of the 18 criteria of which this vendor ranked first of the 20 vendors analyzed positioned only on this particular criteria or question. Each vendor required ten unique client ballots validated to be included in the top ten ranks.
- **Company** – name of the EHR vendor.
- **Subsections** – each subset comprises one-fourth of the total EHR vendor mean at the end of this row and includes all buyers and users who indicate that they contract each respective EMR functional subsection with the supplier, specific to their physician enterprise.
- **Mean** – congruent with the criteria rank, the mean is a calculation of all three subsets of EHR functions surveyed. As a final ranking reference, it includes all market sizes, specialties, delivery sites and geographies.

OVERALL KPI LEADERS

AUSTRALIA/NEW ZEALAND

Summary of criteria outcomes

TABLE 1: SUMMARY OF CRITERIA OUTCOMES		
Total number one criteria ranks	Vendor	Overall rank
12	ALLSCRIPTS	1
2	CERNER	2
4	INTERSYSTEMS	3

Source: Black Book Research

OVERALL KPI LEADERS: AMBULATORY EHR

AUSTRALIA/NEW ZEALAND

Top score per individual criteria

TABLE 2: TOP SCORE PER INDIVIDUAL CRITERIA

Questions	Criteria	EHR Vendor	Overall
1	Strategic Alignment of Client Goals	ALLSCRIPTS	1
2	Innovation & Optimization	ALLSCRIPTS	1
3	Training	INTERSYSTEMS	3
4	Client relationships and cultural fit	INTERSYSTEMS	3
5	Trust, Accountability, Transparency, Ethics	ALLSCRIPTS	1
6	Breadth of offerings, client types, delivery excellence	ALLSCRIPTS	1
7	Deployment and outsourcing implementation	ALLSCRIPTS	1
8	Customization	ALLSCRIPTS	1
9	Integration and interfaces	CERNER	2
10	Scalability, client adaptability, flexible pricing	ALLSCRIPTS	1
11	Compensation and employee performance	INTERSYSTEMS	3
12	Reliability	ALLSCRIPTS	1
13	Brand image and marketing communications	CERNER	2
14	Marginal value adds and modules	ALLSCRIPTS	1
15	Financial & Managerial Viability	ALLSCRIPTS	1
16	Data security and backup services	INTERSYSTEMS	3
17	Support and customer care	ALLSCRIPTS	1
18	Best of breed technology and process improvement	ALLSCRIPTS	1

INDIVIDUAL EHR VENDOR KEY PERFORMANCE INDIVIDUAL EHR VENDOR KEY PERFORMANCE

KEY

A = 90% Agree
 B = 75% Agree
 C = 50% Agree
 D = 25% or Less Agree

RANK	EHR VENDOR AUSTRALIA /NEW ZEALAND	DELIVERED ON EXPECTATIONS	IMPLEMENTATION ON TIME	TOTAL COST OF OWNERSHIP ON BUDGET
1	ALLSCRIPS	A	A	A
2	CERNER	B	B	C
3	INTERSYSTEMS	A	D	B
4	IBM	A	D	D
5	NAPIER	C	C	C
6	ORION	D	D	C
7	MIMSYS	D	C	D

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

AUSTRALIA/NEW ZEALAND

Strategic Alignment of Vendor Offerings to Physician Practice Goals & Client's Mission

Table 5: Organizational structure meets the needs of stakeholders or customers and stakeholder satisfaction is the most important priority. EHR client is likely to recommend the vendor to similar sized physician groups, physicians within the same specialty or delivery setting.

OVERALL RANK	Q1 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	ALLSCRIPTS	9.47	9.91	9.81	9.23	9.61
2	2	CERNER	8.23	8.15	7.30	7.56	7.81
3	3	INTERSYSTEMS	7.80	8.02	7.22	8.13	7.79

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

AUSTRALIA/NEW ZEALAND

Innovation and Optimization

Table 6: Customers are also continuing to push the envelope for further enhancements to which the EHR vendor is responsive. EHR clients also believe that their vendors' technology is helping them manage practices more effectively, generate accurate records and reimbursement billings and cut their overhead in ways that were difficult or impossible to accomplish before electronic medical records were implemented. Vendor is responsive to make client recommendations with cutting edge improvements.

OVERALL RANK	Q2 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA			DECISION SUPPORT		MEAN
			MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	& RESULTS REVIEW/ MANAGEMENT		
1	1	ALLSCRIPTS	9.08	9.12	9.32	9.12	9.16	
3	2	INTERSYSTEMS	9.38	8.88	9.15	8.96	9.09	
2	3	CERNER	8.71	9.42	8.53	8.47	8.78	

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

AUSTRALIA/NEW ZEALAND

Training

Table 7: Electronic medical and health record vendor leadership provides significant and meaningful training opportunities for internal employees and client staff. Leadership strives to develop technology staff, EMR/EHR client service and customer servicing consultant employees. Training modules are effective and practical so that minimal post-implementation training is required on or off site. Regular updates are timely and require minimal additional training to implement.

OVERALL RANK	Q3 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
3	3	INTERSYSTEMS	9.44	9.50	8.79	9.44	9.29
1	1	ALLSCRIPTS	9.50	9.07	9.10	9.34	9.25
2	2	CERNER	8.83	9.09	9.71	9.33	9.24

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

AUSTRALIA/NEW ZEALAND

Client relationships and cultural fit

Table 8: EHR vendor leadership honors customer relationships highly. The relationship with the EHR elevates the customer reputation. Improving physician practice and healthcare delivery efficiency and effectiveness is a priority of the supplier. Governance of engagement is neither complex for buyer nor does it require vendor management attention regularly. There is no regular transparency or quality issue. There are no culture clashes or misfits that threaten relationship's success or client's satisfaction.

OVERALL RANK	Q4 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA			DECISION SUPPORT		MEAN
			MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	& RESULTS REVIEW/ MANAGEMENT		
3	1	INTERSYSTEMS	8.97	9.08	8.90	9.61	9.14	
2	2	CERNER	9.01	9.16	9.17	9.08	9.11	
1	3	ALLSCRIPTS	8.68	8.92	9.08	9.02	9.03	

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

AUSTRALIA/NEW ZEALAND

Trust, Accountability, Ethics and Transparency

Table 9: Trust in enterprise reputation is important to EHR clients as well as prospects. Client possesses an understanding that its EHR organization has the people, processes, and resources to effectively deliver the desired business and clinical results, based on its industry reputation and past performance. There are no disconnects between promises and delivery.

OVERALL RANK	Q5 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	ALLSCRIPTS	9.87	9.90	9.73	9.89	9.85
3	2	INTERSYSTEMS	9.10	9.31	9.14	9.33	9.22
2	3	CERNER	9.00	8.19	9.22	9.17	8.90

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

AUSTRALIA/NEW ZEALAND

Breadth of offerings, varied client settings, delivery excellence across all user types

Table 10: EMR/EHR vendor offers industry recognized horizontal functionality and vertical industry applications and manage bundled EMR services such as ePrescribing and developing new e-Health initiatives. Vendor routinely drives operational performance improvements and results in the areas they affect. Comprehensive offerings are constructed to meet the unique needs of the client’s EHR initiatives. Breadth of vendor modules offers comprehensive system services and broad modules.

OVERALL RANK	Q6 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	ALLSCRIPTS	9.52	9.25	9.12	8.85	9.19
2	2	CERNER	8.91	8.41	7.33	8.97	8.41
3	3	INTERSYSTEMS	8.99	9.62	6.62	8.21	8.36

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

AUSTRALIA/NEW ZEALAND

Deployment and EHR implementation

Table 11: EHR client deploys at a pace acceptable to the client. EHR solutions eliminate excessive supervision over vendor implementations. Vendor overcomes client implementation obstacles and challenges effectively. Technical, organizational and cultural implementation obstacles are handled professionally and punctually. EHR implementation time meets standard expectations. Implementations are efficient and sensitive to users' specific situations which may cause delays.

OVERALL RANK	Q7 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	ALLSCRIPTS	9.14	9.76	9.81	9.33	9.51
3	2	INTERSYSTEMS	8.73	8.93	8.72	8.43	8.70
2	3	CERNER	8.28	8.03	8.42	7.93	8.17

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

AUSTRALIA/NEW ZEALAND

Customization

Table 12: EHR products and process services are customized to meet the unique needs of specific practice client purpose, processes and physician models. Little resistance is encountered when changing performance measurements as clients' needs vary. Extraordinary efforts are made to adapt and convert client special needs into workable solutions with efficient cost and time considerations. EMR software allows for modifications that are not costly or complex.

OVERALL RANK	Q8 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	ALLSCRIPTS	9.74	9.84	9.45	9.34	9.59
2	2	CERNER	8.10	7.39	7.45	7.91	7.71
3	3	INTERSYSTEMS	8.03	6.26	6.84	8.14	7.32

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

AUSTRALIA/NEW ZEALAND

Integration and interfaces

Table 13: EHR vendor supports interfaces so information can be shared between necessary applications. Solutions are easily integrated to existing backend systems as needed and HIE feasible. Seamless interfaces to legacy applications are performed as required for optimal functioning. Human integration and interface activities are administered precisely. Systems communicate effectively among provider groups and ancillaries. True interoperability with other healthcare organizations is factored into implementation.

OVERALL RANK	Q9 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA			DECISION SUPPORT		MEAN
			MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	& RESULTS REVIEW/ MANAGEMENT		
2	1	CERNER	9.74	9.84	9.45	9.34	9.59	
3	2	INTERSYSTEMS	9.01	9.74	9.68	9.69	9.53	
1	3	ALLSCRIPTS	9.14	9.76	9.81	9.33	9.51	

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

AUSTRALIA/NEW ZEALAND

Scalability, client adaptability, flexible pricing

Table 14: EHR services and solutions vendor provides flexible pricing allowing the client to choose and pay for the precise functionality and services needed. Vendor invests in significant infrastructure and has the ability to provide services to enterprise organizations. IT products and services meet the changing and varied needs of the EHR customer. Pricing is not rigid or shifting and meets needs of client.

OVERALL RANK	Q10 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	ALLSCRIPTS	8.77	8.93	8.72	8.43	8.71
2	2	CERNER	8.28	8.03	8.42	7.93	8.17
3	3	INTERSYSTEMS	7.63	7.15	8.54	8.56	7.97

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

AUSTRALIA/NEW ZEALAND

Vendor staff expertise, compensation and employee performance

Table 15: EHR vendor team of employees is considered top in industry for professionalism and skill. Vendor attracts and retains high performing staff. Vendor is focused on building and developing a strong employee team of producers. Employees act like owners/leaders. Company is moving towards leveraged pay at all levels. Vendor is using effective tools to tie performance metrics to compensation policy and compensating top leaders. Human resources-related criteria are scored from the client perspective on this indicator.

OVERALL RANK	Q11 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
3	1	INTERSYSTEMS	9.07	9.04	9.18	8.71	9.00
1	2	ALLSCRIPTS	8.87	8.67	8.98	9.29	8.95
2	3	CERNER	8.07	8.16	7.93	8.20	8.09

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

AUSTRALIA/NEW ZEALAND

Reliability

Table 16: EHR supplier meets agreed terms as evidenced by routine, acceptable service level reporting and industry expectations. Depth and breadth of applications/solutions are acceptable in meeting client needs. Online reliability meets expectations and outages/downtimes are minimized. Solid product and service capacities are demonstrated consistently. Service levels are consistently met as agreed. Services and support response is expedient and resources are appropriately provided by vendor team.

OVERALL RANK	Q12 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA			DECISION SUPPORT		MEAN
			MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	& RESULTS REVIEW/ MANAGEMENT		
1	1	ALLSCRIPTS	9.55	9.86	9.72	9.59	9.68	
2	2	CERNER	9.05	8.92	9.25	9.38	9.15	
3	3	INTERSYSTEMS	9.50	9.30	9.33	8.13	9.07	

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

AUSTRALIA/NEW ZEALAND

Brand image and marketing communications

Table 17: EHR vendor’s marketing and sales statements/pitches are accurately and appropriately represented by actual EMR product and service deliverables. Image is consistent with top EHR rankings. Sales presentations and proposals are delivered upon and corporate integrity/honesty in marketing and business development are highly valued. Company image and integrity are values upheld top-down consistently. Elevated level of relevant client communications enhances the EHR vendor – EHR user relationship.

OVERALL RANK	Q13 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA			DECISION SUPPORT		MEAN
			MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	& RESULTS REVIEW/ MANAGEMENT		
2	1	CERNER	9.84	9.45	9.05	9.41	9.44	
1	2	ALLSCRIPTS	8.90	9.03	9.81	9.88	9.41	
3	3	INTERSYSTEMS	7.06	8.03	7.05	6.71	7.21	

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

AUSTRALIA/NEW ZEALAND

Marginal value adds

Table 18: Beyond stimulus achievement, EHR vendors' cost savings are realized as generally estimated and not over-positioned or over/underestimated in ways that effect major client satisfaction or costs. Vendor offers value-adds as a practice management partner in cost savings and avoidance initiatives and creative programs through bundled EMR product design. Provides true business transformation opportunities to physician practices and other medical settings utilizing EHR.

OVERALL RANK	Q14 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	ALLSCRIPTS	9.40	9.43	9.46	8.89	9.30
2	2	CERNER	9.25	8.45	9.13	8.11	8.74
3	3	INTERSYSTEMS	7.96	8.05	9.11	9.05	8.54

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

AUSTRALIA/NEW ZEALAND

Viability and managerial stability

Table 19: Vendor’s viability, employee turnover, financial stability and/or cultural mismatches do not threaten relationship. Senior management and the board exemplify strong leadership principals to steward appropriate resources that impact EHR buyers. Client is confident of long term industry viability for this vendor based on investments, client adoption, exceptional outcomes and service levels. Field management is notably competent, stable and supportive of clients. EHR vendor demonstrates and provides evidence of competent fiscal management and leadership.

OVERALL RANK	Q15 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	ALLSCRIPTS	8.93	8.30	7.74	9.16	8.53
3	2	INTERSYSTEMS	8.28	8.79	8.24	8.78	8.52
2	3	CERNER	8.72	9.11	7.28	8.83	8.49

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

AUSTRALIA/NEW ZEALAND

Data security and backup services

Table 20: In order to provide secure and constantly dependable EMR service offerings for physician and hospital/IDN affiliate practices and entities, an EHR vendor has to provide the highest level of security and data back-up services. EHR vendor's service in these two areas is superior to the security and back-up system of past internal systems of the physician practice.

OVERALL RANK	Q16 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
3	1	INTERSYSTEMS	8.92	9.04	9.43	9.60	9.25
1	2	ALLSCRIPTS	9.33	9.25	9.93	8.42	9.23
2	3	CERNER	9.29	9.54	8.22	9.10	9.02

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

AUSTRALIA/NEW ZEALAND

Support and customer care

Table 21: Account management provides an adequate amount of onsite administration and support to clients. There exists a formal EHR account management program that meets client needs. Media and clients reference this vendor as an EMHR services leader and top vendor correctly. Customer services and relationship satisfaction is manifested through significant flagship clients as well as smaller and newest customers similarly. Vendor provides appropriate number of accessible support and customer care personnel.

OVERALL RANK	Q17 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	ALLSCRIPTS	9.40	9.50	9.55	9.59	9.51
2	2	CERNER	9.17	8.33	7.95	9.24	8.67
3	3	INTERSYSTEMS	7.28	7.03	7.14	7.04	7.12

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

AUSTRALIA/NEW ZEALAND

Best of breed technology and process improvement developments

Table 22: EHR management and related technology services are considered best of breed. EHR Vendor technology elevates customers via capabilities, equipment, processes, deliverables, professional staff, leadership, quality assurance and innovative initiatives. EHR services are delivered at or above current/former in-house service levels. Technology is current and relevant to exchanging health information among providers, as well as sufficiently offering patient access.

OVERALL RANK	Q18 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	ALLSCRIPTS	9.75	9.82	9.58	9.50	9.66
3	2	INTERSYSTEMS	8.10	9.05	8.58	7.97	8.43
2	13	CERNER	7.65	7.82	8.22	8.07	7.94

Source: Black Book™ 2019



BLACK BOOK™ RESEARCH

India

India

EHR Status

The market for healthcare IT in India has witnessed progressive growth over the last few years and registered a CAGR of 24.3% over the period 2008-2013. The Indian government started an ambitious Digital India program in August 2014. It intends to bridge the digital divide in India and enable e-delivery of services. Digital India Initiative of Indian Government intends to transform India into a digital empowered society and knowledge economy. It is a wide and ambitious project of the present government and will be implemented in multiple phases from the year 2014 to 2018. There are many segments of the Digital India projects and e-health is one of them. A proposal to constitute a National e-health Authority of India (NeHA) was mooted in June 2014. NeHA would lay down operational guidelines and protocols, policies for sharing and exchange of data, audit guidelines and the like. These shall be guided by experience in operation and use of proof of concept, global best practices, and consultations with stakeholders.¹

The Centre for Development of Advanced Computing, an autonomous government scientific organization developed Hospital Management Information System in various models like conventional stand-alone hospital version and Software as a Service over the cloud infrastructure. The real time HMIS streamlines the treatment flow of patients and simultaneously empowers the hospital's workforce to perform their duties efficiently and effectively. It has implemented HMIS across various government hospitals ranging from super specialty hospitals, medical college hospitals, district hospitals to area hospitals. HMIS has been deployed in more than 40 hospitals across India.

The Ministry of Health & Family Welfare has issued guidelines for EHR standards. It is also in the process of creating the National e-Health Authority. The Ministry is implementing an IT system for the processing of insurance claims under the new National Health Protection Scheme. The Ministry is also implementing the National Medical College Network project to provide connectivity for telemedicine. The Ministry of Electronics & IT has been supporting the development and deployment of digital health solution for a long time. It has deployed telemedicine systems in several states in the country. It has sponsored R&D projects in various areas, including EMR system for oncology, technology for HIE, among others.

Department of Information Technology, Govt. of India, has started telemedicine projects in different parts of the country. As a facilitator, the department of information technology has taken initiative for development of technology, initiation of pilot schemes and standardization of telemedicine in the country. These include the telemedicine network in West Bengal for diagnosis and monitoring of tropical diseases, the Kerala and Tamil Nadu Oncology Network for facilitating cancer care, and the Northeastern and Himachal Pradesh hilly states for specialty health care access. It has established more than 75 nodes all over India and support research and development. It has developed telemedicine software systems and its applications towards optimization of medical resources by the Centre for Development of Advanced Computing.²

Market Dynamics

The current status of the healthcare sector in India is associated with low public spending, 1% of GDP, high out of pocket payments (71%), a high level of anemia among young women (56%), high infant mortality (47/1,000 live births), and high maternal mortality (212/100,000 live births), etc. The country lags behind other countries, such as Bangladesh and Sri Lanka, when it comes to the health of its people. The situation is worse for the poor as they cannot afford healthcare at high rates from private sector providers, which currently serve 78% of outpatients and 60% of inpatients.²

The healthcare system in India is comprised of both private and public hospitals and providers. Though public hospitals are available many people opt for private hospitals because they often provide better care, have better infrastructure, shorter wait times, and more supplies. Most people pay out-of-pocket for their medical costs. In 2011, The Integrated National Health System was created, and the government of India hopes to provide universal health care to all of its citizens by 2020. They want to achieve this goal by increasing its public spending from its current 1% to over 6% of its gross domestic product meaning that more taxes, about 15% of revenue, would be enforced and allocated towards healthcare.

India has a population of 1.3 billion people. Though India is classified as a “developing nation” it is important to study the approaches the country has advanced so far in terms of EHR development. India is not only focusing on technology as a way to achieve successful HIE, but also the important policy decisions based around standard management in the current healthcare system that is crucial to daily operations.

Moreover, the country has seen the benefits of information and communication technology (ICT) in transforming the lives of its people by the use of ICT in banking, railway reservations, public service delivery, etc. The same can be achieved in the healthcare sector too. The proliferation of mobile phones and the availability of high-speed Internet offer the possibilities to provide healthcare services in rural and remote areas of the country.

In public healthcare institutions, the usage of information and communication technology is limited to billing and registration. The private sector has a limited form of EMR but it has not yet started the exchange of health information to improve quality of care. However, the situation is changing due to the efforts being made by the government and industry.

They need to ensure the trust of vendors, citizens, and stakeholders in order to successfully create an electronic system that can transmit and receive information. In addition, the National Knowledge Commission hopes to establish national standards and a common and national EHR for India and have additional IT tools created by private vendors. Similarly, India hopes to create a system of standards that help promote interoperability and bolster the national system. Currently, the country is only in the process of creating those standards, but it is important to note the lack of security measures in place in EHR systems in India.

The Centre for Development of Advanced Computing which is considered the most comprehensive EHR system in India does not have strong security and privacy capabilities functioning. This makes the system extremely vulnerable to breaches. Considering the amount of people who reside in this country, India will face serious issues if they do not put more security measures in place. The idea of creating a national EHR system in such a big country is a lofty goal.

Despite this, the rapid increase in internet connectivity has been an important catalyst for the growth of e-learning in all disciplines. Medical domains cannot remain behind. E-learning raises the level of education, literacy and economic development in India where medical education is expensive. The on-line training medium is used extensively to train the workforce in the healthcare sector.

Constraints

The main issues faced for fruitful implementation of health informatics in India involve:

- Funding- the requisite fund is required in order to implement a project, thus the government or individual investors/companies need to promote and rally the necessary funds.
- Computer Literacy- proper training and computer literacy programs need to be organized periodically among the staff members who are associated with health care services.
- Infrastructure and Coordination- proper infrastructure and support system should be developed among the hospitals and health care centers, both public and private sectors. As of right now, the private sector is superior to the public sector in this measure.

- Standards and guidelines- instead of using local system, it would be better to use a system following national and international standards that way there is a common ground between all users.
- Privacy- patient confidentiality should be maintained.
- Information Overload- health IT is a part of health care system. Too much information coming from different areas may result in over information, which may cause hindrance to the health care system.²

Opportunities

The roadmap identifies different tasks that need to be taken up by various stakeholders to adopt EHR at the national level.

Regulations are needed to build trust in patients and providers while using e-health applications. Patients need to be assured that the confidentiality of their health data will not be compromised. Healthcare providers also have to be assured that whatever they record will not be altered without their knowledge. As the number of persons involved in the treatment process is quite large, it is necessary to have a role-based access system.

As more than 75% of outpatients and more than 60% of inpatients are being treated in private healthcare facilities, it is necessary for the government to bring them on-board for using EHR. In view of the size of the country, there is a need to take a free and open source software approach to making good quality software available to hospitals and individual practitioners. It should support all major national language scripts. If it is in the free and open source software domain, even local entrepreneurs can provide technical support.

To further elaborate the topic of innovative software, a large number of IT professionals with exposure to health IT will be required to staff the IT unit of healthcare organizations. At present, no Indian university offers any master or doctoral-level degree in this area. Steps need to be taken to start such courses in some of the institutions in the country.

At present, each hospital has its own way of giving a patient number to each visiting patient, but these are not recognized outside that organization. A consensus is needed on how to assign a number to each patient. The Aadhaar number given by the Unique Identity Authority of India appears to be a good solution. As the seeding of the Aadhaar number is not 100%, an alternate mechanism has to be put in place. An algorithm must be prescribed for use when the Aadhaar number is not available.³

Citations

¹ NHP Admin. *National eHealth Authority*. India, 2017. Web. 4 June 2019. https://www.nhp.gov.in/national_eHealth_authority_neha_mtl

² Srivastava, Sunil. *Adoption of Electronic Health Records: a Roadmap for India*. India, 2016. Web. 4 June 2019. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5116537/>

³ Choudhury, Nitai Ray. *Framework for Development of Information Technology Infrastructure for Healthcare in India*. India, 2016. Web. 4 June 2019. http://www.gqml.net/papers/December_2016_Issue/543QQML_Journal_2016_Choudhury_787-796.pdf

INDIA

2019 EHR SURVEY RESPONSE RATES BY PRACTICE/ORGANIZATION TYPE, VALIDATED SYSTEM USERS4 511 RESPONDENTS

2019 SURVEY RESPONDENT IDENTIFICATION	PERCENT OF TOTAL RESPONSES
Physician/Clinician Name	7%
Clinic/Practice Name	20%
Public Clinic	5%
Health System Clinic	34%
Academic Hospital and Medical Centers over 250 Beds	16%
Community Hospitals	16%
Small Hospitals under 100 Beds	2%
Ambulatory Surgery Centers	0%
TOTAL	100%

Source: Black Book™ 2019

2019 RESULTS

ELECTRONIC HEALTH RECORDS & PRACTICE TECHNOLOGY



HEALTH INFORMATION SYSTEMS

STOP LIGHT SCORING KEY

2019 TOP OVERALL AMBULATORY EHR EMR HIT VENDOR HONORS

INDIA

OMNI MD

FUNCTIONAL SUBSET HONORS: TOP VENDORS FOR INDIA

TOP VENDOR: PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING

OMNI MD

TOP VENDOR: INTEROPERABILITY, COMMUNICATIONS AND CONNECTIVITY

MILLENIUM

TOP VENDOR: ORDER ENTRY AND MANAGEMENT

OMNI MD

TOP VENDOR: RESULTS REVIEW/MANAGEMENT AND DECISION SUPPORT

ALLSCRIPTS

STOP LIGHT SCORING KEY

FIGURE 1: COMPREHENSIVE END-TO-END EMR VENDORS ARE DEFINED AS BEING COMPRISED OF FOUR SURVEYED FUNCTIONS

PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & INTEROPERABILITY, CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/MANAGEMENT
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Source: Black Book Research

FIGURE 2: KEY TO RAW SCORES

0.00 – 5.79 ▶	◀ 5.80 – 7.32 ▶	◀ 7.33 – 8.70 ▶	◀ 8.71 – 10.00
Deal breaking dissatisfaction	Neutral	Satisfactory performance	Overwhelming satisfaction
Does not meet expectations	Meets/does not meet expectations consistently	Meets expectations	Exceeds expectations
CANNOT RECOMMEND VENDOR	WOULD NOT LIKELY RECOMMEND VENDOR	RECOMMENDS VENDOR	HIGHLY RECOMMENDED VENDOR

Source: Black Book Research

STOP LIGHT SCORING KEY

FIGURE 3: COLOR-CODED STOP LIGHT DASHBOARD SCORING KEY	
Green 8.71 +	(Top 10%) scores better than 90% of EHR vendors. Green coded vendors have received constantly highest client satisfaction scores.
Clear	(Top 33%) scores better than 67% of EHR vendors. Well-scored vendor which have middle of the pack results.
Yellow 5.80 to 7.32	Scores better than half of EHR vendors. Cautionary performance scores, areas of improvement required.
Red Less than 5.79	Scores worse than 66% of EHR vendors. Poor performances reported potential cause for contract cancellations.

Source: Black Book Research

STOP LIGHT SCORING KEY

FIGURE 4: RAW SCORE COMPILATION AND SCALE OF REFERENCE

Black Book raw score scales

1 = Deal breaking dissatisfaction ◀ ▶ **10 = Exceeds all expectations**

Source: Black Book Research

Individual vendors can be examined by specific indicators on each of the main functions of EHR vendors as well as grouped and summarized subsets. Details of each subset are contained so that each vendor may be analyzed by function and end-to-end EHR services collectively.

STOP LIGHT SCORING KEY

FIGURE 5: SCORING KEY							
OVERALL RANK	Q1 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIO NS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
5	1	EHR NAME	8.49	8.63	8.50	8.01	8.66

Source: Black Book Research

- **Overall rank** – this rank references the final position of all 18 criteria averaged by the mean score collectively. This vendor ranked fifth of the 20 competitors.
- **Criteria rank** – refers to the number of the question or criteria surveyed. This is the sixth question of the 18 criteria of which this vendor ranked first of the 20 vendors analyzed positioned only on this particular criteria or question. Each vendor required ten unique client ballots validated to be included in the top ten ranks.
- **Company** – name of the EHR vendor.
- **Subsections** – each subset comprises one-fourth of the total EHR vendor mean at the end of this row and includes all buyers and users who indicate that they contract each respective EMR functional subsection with the supplier, specific to their physician enterprise.
- **Mean** – congruent with the criteria rank, the mean is a calculation of all three subsets of EHR functions surveyed. As a final ranking reference, it includes all market sizes, specialties, delivery sites and geographies.

OVERALL KPI LEADERS

INDIA

Summary of criteria outcomes

TABLE 1: SUMMARY OF CRITERIA OUTCOMES		
Total number one criteria ranks	Vendor	Overall rank
5	OMNI MD	1
5	MILLENIUM	2
8	ALLSCRIPTS	3

Source: Black Book Research

OVERALL KPI LEADERS: AMBULATORY HER-

INDIA

Top score per individual criteria

TABLE 2: TOP SCORE PER INDIVIDUAL CRITERIA

Questions	Criteria	EHR Vendor	Overall
1	Strategic Alignment of Client Goals	ALLSCRIPTS	3
2	Innovation & Optimization	MILLENIUM	2
3	Training	MILLENIUM	2
4	Client relationships and cultural fit	MILLENIUM	2
5	Trust, Accountability, Transparency, Ethics	ALLSCRIPTS	3
6	Breadth of offerings, client types, delivery excellence	ALLSCRIPTS	3
7	Deployment and outsourcing implementation	OMNI MD	1
8	Customization	OMNI MD	1
9	Integration and interfaces	ALLSCRIPTS	3
10	Scalability, client adaptability, flexible pricing	OMNI MD	1
11	Compensation and employee performance	ALLSCRIPTS	3
12	Reliability	OMNI MD	1
13	Brand image and marketing communications	ALLSCRIPTS	3
14	Marginal value adds and modules	OMNI MD	1
15	Financial & Managerial Viability	ALLSCRIPTS	3
16	Data security and backup services	MILLENIUM	2
17	Support and customer care	ALLSCRIPTS	3
18	Best of breed technology and process improvement	MILLENIUM	2

KEY

A = 90% Agree
B = 75% Agree
C = 50% Agree
D = 25% or Less Agree

RANK	EHR VENDOR INDIA	DELIVERED ON EXPECTATIONS	IMPLEMENTATION ON TIME	TOTAL COST OF OWNERSHIP ON BUDGET
1	OMNI MD	A	B	C
2	MILLENIUM	B	B	C
3	ALLSCRIPTS	A	C	B
4	MD SYNERGY	C	C	C
5	REVENUE XL	B	C	C
6	SPIGOT SOFTWARE	C	D	D
7	BINARY	C	C	D
8	ECARE INDIA	C	C	C

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

INDIA

Strategic Alignment of Vendor Offerings to Physician Practice Goals & Client's Mission

Table 5: Organizational structure meets the needs of stakeholders or customers and stakeholder satisfaction is the most important priority. EHR client is likely to recommend the vendor to similar sized physician groups, physicians within the same specialty or delivery setting.

OVERALL RANK	Q1 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
3	1	ALLSCRIPTS	9.08	9.04	9.19	9.56	9.22
1	2	OMNI MD	9.26	9.24	9.02	9.28	9.20
2	3	MILLENIUM	8.32	9.17	9.04	9.02	8.89

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

INDIA

Innovation and Optimization

Table 6: Customers are also continuing to push the envelope for further enhancements to which the EHR vendor is responsive. EHR clients also believe that their vendors' technology is helping them manage practices more effectively, generate accurate records and reimbursement billings and cut their overhead in ways that were difficult or impossible to accomplish before electronic medical records were implemented. Vendor is responsive to make client recommendations with cutting edge improvements.

OVERALL RANK	Q2 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
2	1	MILLENIUM	9.36	9.83	9.67	9.88	9.69
3	2	ALLSCRIPTS	9.85	9.86	9.75	9.25	9.68
1	3	OMNI MD	9.25	9.54	9.09	9.76	9.41

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

INDIA

Training

Table 7: Electronic medical and health record vendor leadership provides significant and meaningful training opportunities for internal employees and client staff. Leadership strives to develop technology staff, EMR/EHR client service and customer servicing consultant employees. Training modules are effective and practical so that minimal post-implementation training is required on or off site. Regular updates are timely and require minimal additional training to implement.

OVERALL RANK	Q3 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
2	1	MILLENIUM	9.41	9.60	9.48	8.91	9.35
1	2	OMNI MD	8.90	9.67	9.29	8.89	9.19
3	3	ALLSCRIPTS	8.40	7.99	9.40	8.70	8.62

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

INDIA

Client relationships and cultural fit

Table 8: EHR vendor leadership honors customer relationships highly. The relationship with the EHR elevates the customer reputation. Improving physician practice and healthcare delivery efficiency and effectiveness is a priority of the supplier. Governance of engagement is neither complex for buyer nor does it require vendor management attention regularly. There is no regular transparency or quality issue. There are no culture clashes or misfits that threaten relationship's success or client's satisfaction.

OVERALL RANK	Q4 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
2	1	MILLENIUM	8.99	8.00	9.10	9.02	8.78
1	2	OMNI MD	8.41	9.41	8.99	8.21	8.76
3	3	ALLSCRIPTS	8.88	8.85	8.51	8.68	8.73

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

INDIA

Trust, Accountability, Ethics and Transparency

Table 9: Trust in enterprise reputation is important to EHR clients as well as prospects. Client possesses an understanding that its EHR organization has the people, processes, and resources to effectively deliver the desired business and clinical results, based on its industry reputation and past performance. There are no disconnects between promises and delivery.

OVERALL RANK	Q5 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
3	1	ALLSCRIPTS	9.91	9.69	9.64	9.60	9.71
2	2	MILLENIUM	7.50	9.02	7.93	8.97	8.36
1	3	OMNI MD	7.39	7.89	8.10	7.48	7.72

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

INDIA

Breadth of offerings, varied client settings, delivery excellence across all user types

Table 10: EMR/EHR vendor offers industry recognized horizontal functionality and vertical industry applications and manage bundled EMR services such as ePrescribing and developing new e-Health initiatives. Vendor routinely drives operational performance improvements and results in the areas they affect. Comprehensive offerings are constructed to meet the unique needs of the client’s EHR initiatives. Breadth of vendor modules offers comprehensive system services and broad modules.

OVERALL RANK	Q6 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
3	1	ALLSCRIPTS	9.21	8.50	9.60	8.69	9.00
1	2	OMNI MD	8.10	8.19	7.96	7.52	7.94
2	3	MILLENIUM	5.94	6.30	5.61	7.73	6.40

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

INDIA

Deployment and EHR implementation

Table 11: EHR client deploys at a pace acceptable to the client. EHR solutions eliminate excessive supervision over vendor implementations. Vendor overcomes client implementation obstacles and challenges effectively. Technical, organizational and cultural implementation obstacles are handled professionally and punctually. EHR implementation time meets standard expectations. Implementations are efficient and sensitive to users' specific situations which may cause delays.

OVERALL RANK	Q7 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	OMNI MD	9.43	9.02	9.43	9.61	9.37
2	2	MILLENIUM	9.31	9.72	9.14	9.20	9.34
3	3	ALLSCRIPTS	9.54	9.44	9.32	8.97	9.32

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

INDIA

Customization

Table 12: EHR products and process services are customized to meet the unique needs of specific practice client purpose, processes and physician models. Little resistance is encountered when changing performance measurements as clients' needs vary. Extraordinary efforts are made to adapt and convert client special needs into workable solutions with efficient cost and time considerations. EMR software allows for modifications that are not costly or complex.

OVERALL RANK	Q8 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	OMNI MD	8.32	8.01	8.74	7.21	8.07
3	2	ALLSCRIPTS	7.53	7.91	8.43	8.11	8.00
2	3	MILLENIUM	8.91	7.71	7.83	7.45	7.98

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

INDIA

Integration and interfaces

Table 13: EHR vendor supports interfaces so information can be shared between necessary applications. Solutions are easily integrated to existing backend systems as needed and HIE feasible. Seamless interfaces to legacy applications are performed as required for optimal functioning. Human integration and interface activities are administered precisely. Systems communicate effectively among provider groups and ancillaries. True interoperability with other healthcare organizations is factored into implementation.

OVERALL RANK	Q9 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
3	1	ALLSCRIPTS	9.87	8.60	9.13	9.40	9.25
2	2	MILLENIUM	8.20	8.27	8.60	9.11	8.55
1	3	OMNI MD	8.68	8.10	9.08	8.28	8.54

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

INDIA

Scalability, client adaptability, flexible pricing

Table 14: EHR services and solutions vendor provides flexible pricing allowing the client to choose and pay for the precise functionality and services needed. Vendor invests in significant infrastructure and has the ability to provide services to enterprise organizations. IT products and services meet the changing and varied needs of the EHR customer. Pricing is not rigid or shifting and meets needs of client.

OVERALL RANK	Q10 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	OMNI MD	7.95	8.09	8.49	9.49	8.51
3	2	ALLSCRIPTS	8.68	8.35	8.78	8.20	8.50
2	3	MILLENIUM	8.20	7.74	8.81	8.99	8.44

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

INDIA

Vendor staff expertise, compensation and employee performance

Table 15: EHR vendor team of employees is considered top in industry for professionalism and skill. Vendor attracts and retains high performing staff. Vendor is focused on building and developing a strong employee team of producers. Employees act like owners/leaders. Company is moving towards leveraged pay at all levels. Vendor is using effective tools to tie performance metrics to compensation policy and compensating top leaders. Human resources-related criteria are scored from the client perspective on this indicator.

OVERALL RANK	Q11 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
3	1	ALLSCRIPTS	9.62	9.01	7.51	8.64	8.70
2	2	MILLENIUM	9.11	9.12	8.70	6.29	8.31
1	3	OMNI MD	5.31	8.87	8.89	7.87	7.74

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

INDIA

Reliability

Table 16: EHR supplier meets agreed terms as evidenced by routine, acceptable service level reporting and industry expectations. Depth and breadth of applications/solutions are acceptable in meeting client needs. Online reliability meets expectations and outages/downtimes are minimized. Solid product and service capacities are demonstrated consistently. Service levels are consistently met as agreed. Services and support response is expedient and resources are appropriately provided by vendor team.

OVERALL RANK	Q12 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	OMNI MD	9.01	9.65	9.57	9.13	9.34
2	2	MILLENIUM	9.35	9.65	9.14	9.15	9.32
3	3	ALLSCRIPTS	9.15	9.44	8.94	9.56	9.27

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

INDIA

Brand image and marketing communications

Table 17: EHR vendor’s marketing and sales statements/pitches are accurately and appropriately represented by actual EMR product and service deliverables. Image is consistent with top EHR rankings. Sales presentations and proposals are delivered upon and corporate integrity/honesty in marketing and business development are highly valued. Company image and integrity are values upheld top-down consistently. Elevated level of relevant client communications enhances the EHR vendor – EHR user relationship.

OVERALL RANK	Q13 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
3	1	ALLSCRIPTS	9.76	9.77	9.03	9.53	9.52
1	2	OMNI MD	9.84	9.46	9.39	9.34	9.51
2	3	MILLENIUM	9.43	9.32	8.17	9.33	9.06

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

INDIA

Marginal value adds

Table 18: Beyond stimulus achievement, EHR vendors' cost savings are realized as generally estimated and not over-positioned or over/underestimated in ways that effect major client satisfaction or costs. Vendor offers value-adds as a practice management partner in cost savings and avoidance initiatives and creative programs through bundled EMR product design. Provides true business transformation opportunities to physician practices and other medical settings utilizing EHR.

OVERALL RANK	Q14 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	OMNI MD	8.71	9.02	8.53	8.47	8.68
2	2	MILLENIUM	8.90	9.54	8.91	7.13	8.62
3	3	ALLSCRIPTS	9.03	8.11	8.47	8.84	8.61

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

INDIA

Viability and managerial stability

Table 19: Vendor’s viability, employee turnover, financial stability and/or cultural mismatches do not threaten relationship. Senior management and the board exemplify strong leadership principals to steward appropriate resources that impact EHR buyers. Client is confident of long term industry viability for this vendor based on investments, client adoption, exceptional outcomes and service levels. Field management is notably competent, stable and supportive of clients. EHR vendor demonstrates and provides evidence of competent fiscal management and leadership.

OVERALL RANK	Q15 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
3	8	ALLSCRIPTS	8.97	9.08	8.90	9.61	9.14
1	9	OMNI MD	9.01	9.16	9.17	9.08	9.11
2	10	MILLENIUM	7.88	8.92	8.68	9.02	8.63

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

INDIA

Data security and backup services

Table 20: In order to provide secure and constantly dependable EMR service offerings for physician and hospital/IDN affiliate practices and entities, an EHR vendor has to provide the highest level of security and data back-up services. EHR vendor's service in these two areas is superior to the security and back-up system of past internal systems of the physician practice.

OVERALL RANK	Q16 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
2	4	MILLENIUM	9.40	8.99	9.62	9.17	9.30
3	5	ALLSCRIPTS	9.52	9.25	9.12	8.85	9.19
1	6	OMNI MD	8.91	8.41	7.33	8.97	8.41

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

INDIA

Support and customer care

Table 21: Account management provides an adequate amount of onsite administration and support to clients. There exists a formal EHR account management program that meets client needs. Media and clients reference this vendor as an EMHR services leader and top vendor correctly. Customer services and relationship satisfaction is manifested through significant flagship clients as well as smaller and newest customers similarly. Vendor provides appropriate number of accessible support and customer care personnel.

OVERALL RANK	Q17 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
3	1	ALLSCRIPTS	8.73	8.13	8.72	8.43	8.50
2	2	MILLENIUM	8.28	8.83	8.82	7.93	8.47
1	3	OMNI MD	7.63	7.15	8.54	8.56	7.97

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

INDIA

Best of breed technology and process improvement developments

Table 22: EHR management and related technology services are considered best of breed. EHR Vendor technology elevates customers via capabilities, equipment, processes, deliverables, professional staff, leadership, quality assurance and innovative initiatives. EHR services are delivered at or above current/former in-house service levels. Technology is current and relevant to exchanging health information among providers, as well as sufficiently offering patient access.

OVERALL RANK	Q18 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
2	1	MILLENIUM	9.74	9.84	9.45	9.34	9.59
3	2	ALLSCRIPTS	9.01	9.74	9.68	9.69	9.53
1	3	OMNI MD	9.14	9.76	9.81	9.33	9.51

Source: Black Book™ 2019



BLACK BOOK™
RESEARCH

East Asia

SOUTHEAST ASIA/SINGAPORE/THAILAND/MALAYSIA

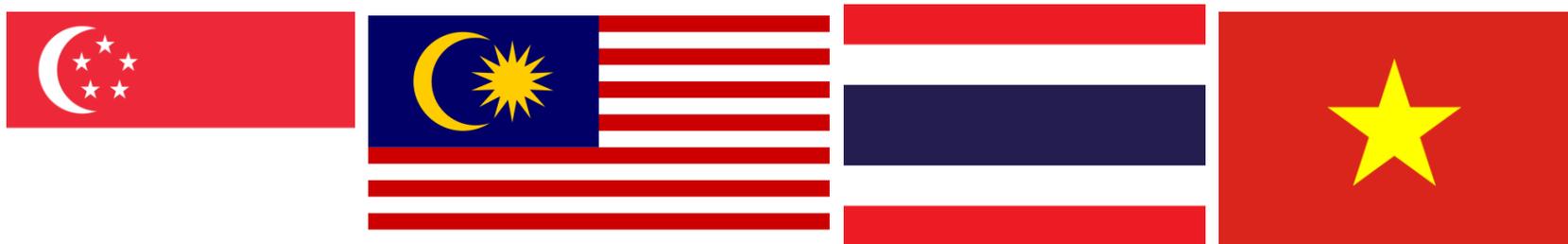
**2019 EHR SURVEY RESPONSE RATES BY PRACTICE/ORGANIZATION TYPE, VALIDATED SYSTEM USERS
428 RESPONDENTS**

2019 SURVEY RESPONDENT IDENTIFICATION	PERCENT OF TOTAL RESPONSES
Physician/Clinician Name	5%
Clinic/Practice Name	31%
Public Clinic	9%
Health System Clinic	22%
Academic Hospital and Medical Centers over 250 Beds	16%
Community Hospitals	14%
Small Hospitals under 100 Beds	3%
Ambulatory Surgery Centers	0%
TOTAL	100%

Black Book™ 2019

2019 RESULTS

ELECTRONIC HEALTH RECORDS & PRACTICE TECHNOLOGY



HEALTH INFORMATION SYSTEMS

STOP LIGHT SCORING KEY

2019 TOP OVERALL AMBULATORY EHR EMR HIT VENDOR HONORS

SOUTHEAST

ASIA/SINGAPORE/THAILAND/MALAYSIA/THAILAND/MALAYSIA/VIETNAM

EPIC SYSTEMS

FUNCTIONAL SUBSET HONORS: TOP VENDORS FOR ASIA

TOP VENDOR: PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING

EPIC SYSTEMS

TOP VENDOR: INTEROPERABILITY, COMMUNICATIONS AND CONNECTIVITY

INTERSYSTEMS

TOP VENDOR: ORDER ENTRY AND MANAGEMENT

EPIC SYSTEMS

TOP VENDOR: RESULTS REVIEW/MANAGEMENT AND DECISION SUPPORT

DOCENGAGE

STOP LIGHT SCORING KEY

FIGURE 1: COMPREHENSIVE END-TO-END EMR VENDORS ARE DEFINED AS BEING COMPRISED OF FOUR SURVEYED FUNCTIONS

PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & INTEROPERABILITY, CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/MANAGEMENT
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Source: Black Book Research

FIGURE 2: KEY TO RAW SCORES

0.00 – 5.79 ▶	◀ 5.80 – 7.32 ▶	◀ 7.33 – 8.70 ▶	◀ 8.71 – 10.00
Deal breaking dissatisfaction	Neutral	Satisfactory performance	Overwhelming satisfaction
Does not meet expectations	Meets/does not meet expectations consistently	Meets expectations	Exceeds expectations
CANNOT RECOMMEND VENDOR	WOULD NOT LIKELY RECOMMEND VENDOR	RECOMMENDS VENDOR	HIGHLY RECOMMENDED VENDOR

Source: Black Book Research

STOP LIGHT SCORING KEY

FIGURE 3: COLOR-CODED STOP LIGHT DASHBOARD SCORING KEY	
Green 8.71 +	(Top 10%) scores better than 90% of EHR vendors. Green coded vendors have received constantly highest client satisfaction scores.
Clear	(Top 33%) scores better than 67% of EHR vendors. Well-scored vendor which have middle of the pack results.
Yellow 5.80 to 7.32	Scores better than half of EHR vendors. Cautionary performance scores, areas of improvement required.
Red Less than 5.79	Scores worse than 66% of EHR vendors. Poor performances reported potential cause for contract cancellations.

Source: Black Book Research

STOP LIGHT SCORING KEY

FIGURE 4: RAW SCORE COMPILATION AND SCALE OF REFERENCE

Black Book raw score scales

1 = Deal breaking dissatisfaction ◀ ▶ **10 = Exceeds all expectations**

Source: Black Book Research

Individual vendors can be examined by specific indicators on each of the main functions of EHR vendors as well as grouped and summarized subsets. Details of each subset are contained so that each vendor may be analyzed by function and end-to-end EHR services collectively.

STOP LIGHT SCORING KEY

FIGURE 5: SCORING KEY							
OVERALL RANK	Q1 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIO NS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
5	1	EHR NAME	8.49	8.63	8.50	8.01	8.66

Source: Black Book Research

- **Overall rank** – this rank references the final position of all 18 criteria averaged by the mean score collectively. This vendor ranked fifth of the 20 competitors.
- **Criteria rank** – refers to the number of the question or criteria surveyed. This is the sixth question of the 18 criteria of which this vendor ranked first of the 20 vendors analyzed positioned only on this particular criteria or question. Each vendor required ten unique client ballots validated to be included in the top ten ranks.
- **Company** – name of the EHR vendor.
- **Subsections** – each subset comprises one-fourth of the total EHR vendor mean at the end of this row and includes all buyers and users who indicate that they contract each respective EMR functional subsection with the supplier, specific to their physician enterprise.
- **Mean** – congruent with the criteria rank, the mean is a calculation of all three subsets of EHR functions surveyed. As a final ranking reference, it includes all market sizes, specialties, delivery sites and geographies.

OVERALL KPI LEADERS

SOUTHEAST ASIA/SINGAPORE/THAILAND/MALAYSIA

Summary of criteria outcomes

TABLE 1: SUMMARY OF CRITERIA OUTCOMES		
Total number one criteria ranks	Vendor	Overall rank
6	EPIC SYSTEMS	1
8	ALLSCRIPTS	2
4	INTERSYSTEMS	3

Source: Black Book Research

OVERALL KPI LEADERS: AMBULATORY EHR

SOUTHEAST ASIA/SINGAPORE/THAILAND/MALAYSIA

Top score per individual criteria

TABLE 2: TOP SCORE PER INDIVIDUAL CRITERIA

Questions	Criteria	EHR Vendor	Overall
1	Strategic Alignment of Client Goals	EPIC SYSTEMS	1
2	Innovation & Optimization	ALLSCRIPTS	2
3	Training	ALLSCRIPTS	2
4	Client relationships and cultural fit	EPIC SYSTEMS	1
5	Trust, Accountability, Transparency, Ethics	ALLSCRIPTS	2
6	Breadth of offerings, client types, delivery excellence	EPIC SYSTEMS	1
7	Deployment and outsourcing implementation	ALLSCRIPTS	2
8	Customization	INTERSYSTEMS	3
9	Integration and interfaces	INTERSYSTEMS	3
10	Scalability, client adaptability, flexible pricing	ALLSCRIPTS	2
11	Compensation and employee performance	EPIC SYSTEMS	1
12	Reliability	ALLSCRIPTS	2
13	Brand image and marketing communications	EPIC SYSTEMS	1
14	Marginal value adds and modules	INTERSYSTEMS	3
15	Financial & Managerial Viability	EPIC SYSTEMS	1
16	Data security and backup services	ALLSCRIPTS	2
17	Support and customer care	INTERSYSTEMS	3
18	Best of breed technology and process improvement	ALLSCRIPTS	2

INDIVIDUAL EHR VENDOR KEY PERFORMANCE INDIVIDUAL EHR VENDOR KEY PERFORMANCE

KEY

A = 90% Agree
 B = 75% Agree
 C = 50% Agree
 D = 25% or Less Agree

RANK	EHR VENDOR SOUTHEAST ASIA	DELIVERED ON EXPECTATIONS	IMPLEMENTATION ON TIME	TOTAL COST OF OWNERSHIP ON BUDGET
1	EPIC SYSTEMS	B	B	C
2	ALLSCRIPTS	B	A	A
3	INTERSYSTEMS	C	A	C
4	DOCENGAGE	B	B	C
5	NAPIER	B	D	A
6	MIMSYS	C	C	C
7	YONYOU	C	C	C
8	CLINICEA	C	C	C

SOUTHEAST ASIA/SINGAPORE/THAILAND/MALAYSIA

Strategic Alignment of Vendor Offerings to Physician Practice Goals & Client’s Mission

Table 5: Organizational structure meets the needs of stakeholders or customers and stakeholder satisfaction is the most important priority. EHR client is likely to recommend the vendor to similar sized physician groups, physicians within the same specialty or delivery setting.

OVERALL RANK	Q1 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	EPIC SYSTEMS	9.43	8.95	9.35	8.97	9.18
3	2	INTERSYSTEMS	9.41	9.08	9.58	8.36	9.11
2	3	ALLSCRIPTS	7.97	9.47	9.08	8.97	8.87

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

SOUTHEAST ASIA/SINGAPORE/THAILAND/MALAYSIA

Innovation and Optimization

Table 6: Customers are also continuing to push the envelope for further enhancements to which the EHR vendor is responsive. EHR clients also believe that their vendors' technology is helping them manage practices more effectively, generate accurate records and reimbursement billings and cut their overhead in ways that were difficult or impossible to accomplish before electronic medical records were implemented. Vendor is responsive to make client recommendations with cutting edge improvements.

OVERALL RANK	Q2 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA			DECISION SUPPORT		MEAN
			MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	& RESULTS REVIEW/ MANAGEMENT		
2	1	ALLSCRIPTS	9.13	8.76	9.04	8.43	8.84	
3	2	INTERSYSTEMS	8.47	8.67	8.94	9.25	8.83	
1	3	EPIC SYSTEMS	8.87	8.96	7.93	9.00	8.69	

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

SOUTHEAST ASIA/SINGAPORE/THAILAND/MALAYSIA

Training

Table 7: Electronic medical and health record vendor leadership provides significant and meaningful training opportunities for internal employees and client staff. Leadership strives to develop technology staff, EMR/EHR client service and customer servicing consultant employees. Training modules are effective and practical so that minimal post-implementation training is required on or off site. Regular updates are timely and require minimal additional training to implement.

OVERALL RANK	Q3 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
2	8	ALLSCRIPTS	8.95	8.65	8.82	8.90	8.83
3	9	INTERSYSTEMS	8.07	8.04	6.57	8.13	7.70
1	10	EPIC SYSTEMS	6.73	6.99	7.62	5.43	6.69

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

SOUTHEAST ASIA/SINGAPORE/THAILAND/MALAYSIA

Client relationships and cultural fit

Table 8: EHR vendor leadership honors customer relationships highly. The relationship with the EHR elevates the customer reputation. Improving physician practice and healthcare delivery efficiency and effectiveness is a priority of the supplier. Governance of engagement is neither complex for buyer nor does it require vendor management attention regularly. There is no regular transparency or quality issue. There are no culture clashes or misfits that threaten relationship's success or client's satisfaction.

OVERALL RANK	Q4 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	EPIC SYSTEMS	9.84	9.45	9.05	9.49	9.46
3	2	INTERSYSTEMS	8.86	8.63	9.81	9.48	9.20
2	3	ALLSCRIPTS	8.86	9.43	8.85	8.41	9.01

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

SOUTHEAST ASIA/SINGAPORE/THAILAND/MALAYSIA

Trust, Accountability, Ethics and Transparency

Table 9: Trust in enterprise reputation is important to EHR clients as well as prospects. Client possesses an understanding that its EHR organization has the people, processes, and resources to effectively deliver the desired business and clinical results, based on its industry reputation and past performance. There are no disconnects between promises and delivery.

OVERALL RANK	Q5 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
2	1	ALLSCRIPTS	9.66	9.16	9.69	9.60	9.53
3	2	INTERSYSTEMS	7.66	8.99	9.10	7.69	8.36
1	3	EPIC SYSTEMS	8.18	7.90	9.16	7.47	8.18

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

SOUTHEAST ASIA/SINGAPORE/THAILAND/MALAYSIA

Breadth of offerings, varied client settings, delivery excellence across all user types

Table 10: EMR/EHR vendor offers industry recognized horizontal functionality and vertical industry applications and manage bundled EMR services such as ePrescribing and developing new e-Health initiatives. Vendor routinely drives operational performance improvements and results in the areas they affect. Comprehensive offerings are constructed to meet the unique needs of the client’s EHR initiatives. Breadth of vendor modules offers comprehensive system services and broad modules.

OVERALL RANK	Q6 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	EPIC SYSTEMS	9.79	9.85	9.99	9.77	9.85
2	2	ALLSCRIPTS	9.92	9.57	9.88	9.89	9.82
3	3	INTERSYSTEMS	8.92	9.04	9.43	9.60	9.25

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

SOUTHEAST ASIA/SINGAPORE/THAILAND/MALAYSIA

Deployment and EHR implementation

Table 11: EHR client deploys at a pace acceptable to the client. EHR solutions eliminate excessive supervision over vendor implementations. Vendor overcomes client implementation obstacles and challenges effectively. Technical, organizational and cultural implementation obstacles are handled professionally and punctually. EHR implementation time meets standard expectations. Implementations are efficient and sensitive to users' specific situations which may cause delays.

OVERALL RANK	Q7 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
2	1	ALLSCRIPTS	9.33	9.25	9.93	8.42	9.23
3	2	INTERSYSTEMS	10.00	9.54	8.22	9.10	9.22
1	3	EPIC SYSTEMS	8.10	7.39	7.45	7.91	7.71

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

SOUTHEAST ASIA/SINGAPORE/THAILAND/MALAYSIA

Customization

Table 12: EHR products and process services are customized to meet the unique needs of specific practice client purpose, processes and physician models. Little resistance is encountered when changing performance measurements as clients' needs vary. Extraordinary efforts are made to adapt and convert client special needs into workable solutions with efficient cost and time considerations. EMR software allows for modifications that are not costly or complex.

OVERALL RANK	Q8 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
3	1	INTERSYSTEMS	9.80	8.83	8.14	8.44	8.80
1	2	EPIC SYSTEMS	8.10	9.05	8.50	7.97	8.41
2	3	ALLSCRIPTS	7.82	8.92	8.05	8.59	8.35

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

SOUTHEAST ASIA/SINGAPORE/THAILAND/MALAYSIA

Integration and interfaces

Table 13: EHR vendor supports interfaces so information can be shared between necessary applications. Solutions are easily integrated to existing backend systems as needed and HIE feasible. Seamless interfaces to legacy applications are performed as required for optimal functioning. Human integration and interface activities are administered precisely. Systems communicate effectively among provider groups and ancillaries. True interoperability with other healthcare organizations is factored into implementation.

OVERALL RANK	Q9 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA			DECISION SUPPORT		MEAN
			MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	& RESULTS REVIEW/ MANAGEMENT		
3	1	INTERSYSTEMS	9.75	9.82	9.50	9.50	9.64	
2	2	ALLSCRIPTS	9.40	9.50	9.95	9.59	9.61	
1	3	EPIC SYSTEMS	7.36	8.13	8.16	8.76	8.10	

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

SOUTHEAST ASIA/SINGAPORE/THAILAND/MALAYSIA

Scalability, client adaptability, flexible pricing

Table 14: EHR services and solutions vendor provides flexible pricing allowing the client to choose and pay for the precise functionality and services needed. Vendor invests in significant infrastructure and has the ability to provide services to enterprise organizations. IT products and services meet the changing and varied needs of the EHR customer. Pricing is not rigid or shifting and meets needs of client.

OVERALL RANK	Q10 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
2	1	ALLSCRIPTS	9.71	9.82	9.56	9.65	9.69
3	2	INTERSYSTEMS	8.29	8.40	9.23	9.01	8.68
1	3	EPIC SYSTEMS	7.36	7.34	7.11	7.07	7.20

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

SOUTHEAST ASIA/SINGAPORE/THAILAND/MALAYSIA

Vendor staff expertise, compensation and employee performance

Table 15: EHR vendor team of employees is considered top in industry for professionalism and skill. Vendor attracts and retains high performing staff. Vendor is focused on building and developing a strong employee team of producers. Employees act like owners/leaders. Company is moving towards leveraged pay at all levels. Vendor is using effective tools to tie performance metrics to compensation policy and compensating top leaders. Human resources-related criteria are scored from the client perspective on this indicator.

OVERALL RANK	Q11 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	EPIC SYSTEMS	9.15	9.09	8.64	8.23	8.78
3	2	INTERSYSTEMS	8.57	8.93	9.16	8.32	8.75
2	3	ALLSCRIPTS	9.10	8.83	8.94	7.90	8.72

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

SOUTHEAST ASIA/SINGAPORE/THAILAND/MALAYSIA

Reliability

Table 16: EHR supplier meets agreed terms as evidenced by routine, acceptable service level reporting and industry expectations. Depth and breadth of applications/solutions are acceptable in meeting client needs. Online reliability meets expectations and outages/downtimes are minimized. Solid product and service capacities are demonstrated consistently. Service levels are consistently met as agreed. Services and support response is expedient and resources are appropriately provided by vendor team.

OVERALL RANK	Q12 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
2	1	ALLSCRIPTS	9.29	9.36	9.11	9.51	9.32
1	2	EPIC SYSTEMS	9.09	9.29	8.07	8.28	8.67
3	3	INTERSYSTEMS	7.13	7.03	6.94	8.05	7.28

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

SOUTHEAST ASIA/SINGAPORE/THAILAND/MALAYSIA

Brand image and marketing communications

Table 17: EHR vendor’s marketing and sales statements/pitches are accurately and appropriately represented by actual EMR product and service deliverables. Image is consistent with top EHR rankings. Sales presentations and proposals are delivered upon and corporate integrity/honesty in marketing and business development are highly valued. Company image and integrity are values upheld top-down consistently. Elevated level of relevant client communications enhances the EHR vendor – EHR user relationship.

OVERALL RANK	Q13 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	EPIC SYSTEMS	9.58	9.60	9.44	9.42	9.51
2	2	ALLSCRIPTS	9.75	9.20	9.71	9.16	9.46
3	3	INTERSYSTEMS	9.50	9.81	9.18	9.24	9.43

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

SOUTHEAST ASIA/SINGAPORE/THAILAND/MALAYSIA

Marginal value adds

Table 18: Beyond stimulus achievement, EHR vendors' cost savings are realized as generally estimated and not over-positioned or over/underestimated in ways that effect major client satisfaction or costs. Vendor offers value-adds as a practice management partner in cost savings and avoidance initiatives and creative programs through bundled EMR product design. Provides true business transformation opportunities to physician practices and other medical settings utilizing EHR.

OVERALL RANK	Q14 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
3	1	INTERSYSTEMS	9.35	9.08	8.73	8.61	8.93
2	2	ALLSCRIPTS	9.09	9.29	8.47	8.68	8.87
1	3	EPIC SYSTEMS	8.53	8.03	8.74	9.05	8.58

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

SOUTHEAST ASIA/SINGAPORE/THAILAND/MALAYSIA

Viability and managerial stability

Table 19: Vendor’s viability, employee turnover, financial stability and/or cultural mismatches do not threaten relationship. Senior management and the board exemplify strong leadership principals to steward appropriate resources that impact EHR buyers. Client is confident of long term industry viability for this vendor based on investments, client adoption, exceptional outcomes and service levels. Field management is notably competent, stable and supportive of clients. EHR vendor demonstrates and provides evidence of competent fiscal management and leadership.

OVERALL RANK	Q15 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	EPIC SYSTEMS	9.70	9.39	9.06	9.35	9.38
3	2	INTERSYSTEMS	9.09	9.39	9.20	9.74	9.36
2	3	ALLSCRIPTS	9.01	9.17	9.00	8.14	8.83

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

SOUTHEAST ASIA/SINGAPORE/THAILAND/MALAYSIA

Data security and backup services

Table 20: In order to provide secure and constantly dependable EMR service offerings for physician and hospital/IDN affiliate practices and entities, an EHR vendor has to provide the highest level of security and data back-up services. EHR vendor's service in these two areas is superior to the security and back-up system of past internal systems of the physician practice.

OVERALL RANK	Q16 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
2	1	ALLSCRIPTS	8.87	9.40	8.83	8.78	8.97
1	2	EPIC SYSTEMS	9.10	8.05	9.54	8.74	8.86
3	3	INTERSYSTEMS	8.84	7.49	9.36	8.41	8.53

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

SOUTHEAST ASIA/SINGAPORE/THAILAND/MALAYSIA

Support and customer care

Table 21: Account management provides an adequate amount of onsite administration and support to clients. There exists a formal EHR account management program that meets client needs. Media and clients reference this vendor as an EMHR services leader and top vendor correctly. Customer services and relationship satisfaction is manifested through significant flagship clients as well as smaller and newest customers similarly. Vendor provides appropriate number of accessible support and customer care personnel.

OVERALL RANK	Q17 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
3	1	INTERSYSTEMS	9.27	9.47	9.00	8.77	9.13
2	2	ALLSCRIPTS	9.16	9.17	7.98	9.60	8.98
1	3	EPIC SYSTEMS	8.79	8.81	8.32	7.96	8.47

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

SOUTHEAST ASIA/SINGAPORE/THAILAND/MALAYSIA

Best of breed technology and process improvement developments

Table 22: EHR management and related technology services are considered best of breed. EHR Vendor technology elevates customers via capabilities, equipment, processes, deliverables, professional staff, leadership, quality assurance and innovative initiatives. EHR services are delivered at or above current/former in-house service levels. Technology is current and relevant to exchanging health information among providers, as well as sufficiently offering patient access.

OVERALL RANK	Q18 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA			DECISION SUPPORT		MEAN
			MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	& RESULTS REVIEW/ MANAGEMENT		
2	1	ALLSCRIPTS	9.42	8.64	9.12	9.49	9.16	
1	2	EPIC SYSTEMS	8.80	9.07	9.61	9.06	9.14	
3	3	INTERSYSTEMS	8.05	9.33	9.01	8.61	8.76	

Source: Black Book™ 2019

CHINA

2019 EHR SURVEY RESPONSE RATES BY PRACTICE/ORGANIZATION TYPE, VALIDATED SYSTEM USERS 78 RESPONDENTS

2019 SURVEY RESPONDENT IDENTIFICATION	PERCENT OF TOTAL RESPONSES
Physician/Clinician Name	1%
Clinic/Practice Name	23%
Public Clinic	3%
Health System Clinic	31%
Academic Hospital and Medical Centers over 250 Beds	40%
Community Hospitals	2%
Small Hospitals under 100 Beds	0%
Ambulatory Surgery Centers	0%
TOTAL	100%

Source: Black Book™ 2019

2019 RESULTS

ELECTRONIC HEALTH RECORDS & PRACTICE TECHNOLOGY



HEALTH INFORMATION SYSTEMS

STOP LIGHT SCORING KEY

2019 TOP OVERALL AMBULATORY EHR EMR HIT VENDOR HONORS

CHINA

PHILIPS

FUNCTIONAL SUBSET HONORS: TOP VENDORS FOR CHINA

TOP VENDOR: PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING

PHILIPS

TOP VENDOR: INTEROPERABILITY, COMMUNICATIONS AND CONNECTIVITY

IBM

TOP VENDOR: ORDER ENTRY AND MANAGEMENT

PHILIPS

TOP VENDOR: RESULTS REVIEW/MANAGEMENT AND DECISION SUPPORT

INTERSYSTEMS

STOP LIGHT SCORING KEY

FIGURE 1: COMPREHENSIVE END-TO-END EMR VENDORS ARE DEFINED AS BEING COMPRISED OF FOUR SURVEYED FUNCTIONS

PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & INTEROPERABILITY, CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/MANAGEMENT
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Source: Black Book Research

FIGURE 2: KEY TO RAW SCORES

0.00 – 5.79 ▶	◀ 5.80 – 7.32 ▶	◀ 7.33 – 8.70 ▶	◀ 8.71 – 10.00
Deal breaking dissatisfaction	Neutral	Satisfactory performance	Overwhelming satisfaction
Does not meet expectations	Meets/does not meet expectations consistently	Meets expectations	Exceeds expectations
CANNOT RECOMMEND VENDOR	WOULD NOT LIKELY RECOMMEND VENDOR	RECOMMENDS VENDOR	HIGHLY RECOMMENDED VENDOR

Source: Black Book Research

STOP LIGHT SCORING KEY

FIGURE 3: COLOR-CODED STOP LIGHT DASHBOARD SCORING KEY	
Green 8.71 +	(Top 10%) scores better than 90% of EHR vendors. Green coded vendors have received constantly highest client satisfaction scores.
Clear	(Top 33%) scores better than 67% of EHR vendors. Well-scored vendor which have middle of the pack results.
Yellow 5.80 to 7.32	Scores better than half of EHR vendors. Cautionary performance scores, areas of improvement required.
Red Less than 5.79	Scores worse than 66% of EHR vendors. Poor performances reported potential cause for contract cancellations.

Source: Black Book Research

STOP LIGHT SCORING KEY

FIGURE 4: RAW SCORE COMPILATION AND SCALE OF REFERENCE

Black Book raw score scales

1 = Deal breaking dissatisfaction ◀ ▶ **10 = Exceeds all expectations**

Source: Black Book Research

Individual vendors can be examined by specific indicators on each of the main functions of EHR vendors as well as grouped and summarized subsets. Details of each subset are contained so that each vendor may be analyzed by function and end-to-end EHR services collectively.

STOP LIGHT SCORING KEY

FIGURE 5: SCORING KEY							
OVERALL RANK	Q1 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIO NS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
5	1	EHR NAME	8.49	8.63	8.50	8.01	8.66

Source: Black Book Research

- Overall rank** – this rank references the final position of all 18 criteria averaged by the mean score collectively. This vendor ranked fifth of the 20 competitors.
- Criteria rank** – refers to the number of the question or criteria surveyed. This is the sixth question of the 18 criteria of which this vendor ranked first of the 20 vendors analyzed positioned only on this particular criteria or question. Each vendor required ten unique client ballots validated to be included in the top ten ranks.
- Company** – name of the EHR vendor.
- Subsections** – each subset comprises one-fourth of the total EHR vendor mean at the end of this row and includes all buyers and users who indicate that they contract each respective EMR functional subsection with the supplier, specific to their physician enterprise.
- Mean** – congruent with the criteria rank, the mean is a calculation of all three subsets of EHR functions surveyed. As a final ranking reference, it includes all market sizes, specialties, delivery sites and geographies.

OVERALL KPI LEADERS

CHINA

Summary of criteria outcomes

TABLE 2: SUMMARY OF CRITERIA OUTCOMES		
Total number one criteria ranks	Vendor	Overall rank
12	PHILIPS	1
5	IBM	2
1	YONYOU	3

Source: Black Book Research

OVERALL KPI LEADERS: AMBULATORY EHR

CHINA

Top score per individual criteria

TABLE 2: TOP SCORE PER INDIVIDUAL CRITERIA

Questions	Criteria	EHR Vendor	Overall
1	Strategic Alignment of Client Goals	PHILIPS	1
2	Innovation & Optimization	IBM	2
3	Training	PHILIPS	1
4	Client relationships and cultural fit	PHILIPS	1
5	Trust, Accountability, Transparency, Ethics	PHILIPS	1
6	Breadth of offerings, client types, delivery excellence	IBM	2
7	Deployment and outsourcing implementation	PHILIPS	1
8	Customization	IBM	2
9	Integration and interfaces	IBM	2
10	Scalability, client adaptability, flexible pricing	PHILIPS	1
11	Compensation and employee performance	IBM	2
12	Reliability	PHILIPS	1
13	Brand image and marketing communications	PHILIPS	1
14	Marginal value adds and modules	YONYOU	3
15	Financial & Managerial Viability	PHILIPS	1
16	Data security and backup services	PHILIPS	1
17	Support and customer care	PHILIPS	1
18	Best of breed technology and process improvement	PHILIPS	1

INDIVIDUAL EHR VENDOR KEY PERFORMANCE INDIVIDUAL EHR VENDOR KEY PERFORMANCE

KEY

A = 90% Agree
 B = 75% Agree
 C = 50% Agree
 D = 25% or Less Agree

RANK	EHR VENDOR CHINA	DELIVERED ON EXPECTATIONS	IMPLEMENTATION ON TIME	TOTAL COST OF OWNERSHIP ON BUDGET
1	PHILIPS	B	B	B
2	IBM	B	B	C
3	YON YOU	C	C	A
4	CISCO	B	B	B
5	INTERSYSTEMS	B	B	B
6	CERNER	C	C	C
7	DIPS	C	C	D

CHINA

Strategic Alignment of Vendor Offerings to Physician Practice Goals & Client’s Mission

Table 5: Organizational structure meets the needs of stakeholders or customers and stakeholder satisfaction is the most important priority. EHR client is likely to recommend the vendor to similar sized physician groups, physicians within the same specialty or delivery setting.

OVERALL RANK	Q1 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	PHILIPS	9.40	9.09	9.22	9.45	9.29
2	2	IBM	8.74	9.43	8.01	8.14	8.58
3	3	YONYOU	8.63	7.43	9.05	8.54	8.41

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

CHINA

Innovation and Optimization

Table 6: Customers are also continuing to push the envelope for further enhancements to which the EHR vendor is responsive. EHR clients also believe that their vendors' technology is helping them manage practices more effectively, generate accurate records and reimbursement billings and cut their overhead in ways that were difficult or impossible to accomplish before electronic medical records were implemented. Vendor is responsive to make client recommendations with cutting edge improvements.

OVERALL RANK	Q2 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA				DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
			MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT			
2	1	IBM	9.53	9.73	9.67	9.74	9.67	
1	2	PHILIPS	9.21	9.48	9.28	9.43	9.35	
3	3	YONYOU	8.94	9.06	9.67	9.72	9.34	

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

CHINA

Training

Table 7: Electronic medical and health record vendor leadership provides significant and meaningful training opportunities for internal employees and client staff. Leadership strives to develop technology staff, EMR/EHR client service and customer servicing consultant employees. Training modules are effective and practical so that minimal post-implementation training is required on or off site. Regular updates are timely and require minimal additional training to implement.

OVERALL RANK	Q3 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	PHILIPS	8.15	7.98	8.37	8.42	8.23
2	2	IBM	7.27	8.39	7.57	7.55	7.70
3	3	YONYOU	7.09	7.32	7.31	7.34	7.27

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

CHINA

Client relationships and cultural fit

Table 8: EHR vendor leadership honors customer relationships highly. The relationship with the EHR elevates the customer reputation. Improving physician practice and healthcare delivery efficiency and effectiveness is a priority of the supplier. Governance of engagement is neither complex for buyer nor does it require vendor management attention regularly. There is no regular transparency or quality issue. There are no culture clashes or misfits that threaten relationship's success or client's satisfaction.

OVERALL RANK	Q4 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	PHILIPS	9.83	9.79	9.65	9.63	9.73
2	2	IBM	9.05	9.74	9.68	9.73	9.55
3	3	YONYOU	7.16	7.59	7.44	6.93	6.63

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

CHINA

Trust, Accountability, Ethics and Transparency

Table 9: Trust in enterprise reputation is important to EHR clients as well as prospects. Client possesses an understanding that its EHR organization has the people, processes, and resources to effectively deliver the desired business and clinical results, based on its industry reputation and past performance. There are no disconnects between promises and delivery.

OVERALL RANK	Q5 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	PHILIPS	8.96	9.34	9.45	9.58	9.33
2	2	IBM	8.82	9.06	8.90	8.86	8.91
3	3	YONYOU	7.15	7.02	7.10	7.13	7.10

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

CHINA

Breadth of offerings, varied client settings, delivery excellence across all user types

Table 10: EMR/EHR vendor offers industry recognized horizontal functionality and vertical industry applications and manage bundled EMR services such as ePrescribing and developing new e-Health initiatives. Vendor routinely drives operational performance improvements and results in the areas they affect. Comprehensive offerings are constructed to meet the unique needs of the client’s EHR initiatives. Breadth of vendor modules offers comprehensive system services and broad modules.

OVERALL RANK	Q6 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
2	1	IBM	8.94	9.52	9.64	9.29	9.29
1	2	PHILIPS	9.17	9.53	9.24	9.26	9.15
3	3	YONYOU	7.07	6.69	7.61	7.40	6.99

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

CHINA

Deployment and EHR implementation

Table 11: EHR client deploys at a pace acceptable to the client. EHR solutions eliminate excessive supervision over vendor implementations. Vendor overcomes client implementation obstacles and challenges effectively. Technical, organizational and cultural implementation obstacles are handled professionally and punctually. EHR implementation time meets standard expectations. Implementations are efficient and sensitive to users' specific situations which may cause delays.

OVERALL RANK	Q7 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	PHILIPS	9.84	9.59	9.50	9.31	9.53
2	2	IBM	9.34	9.11	9.35	9.14	9.31
3	3	YONYOU	7.65	7.45	8.13	6.92	7.23

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

CHINA

Customization

Table 12: EHR products and process services are customized to meet the unique needs of specific practice client purpose, processes and physician models. Little resistance is encountered when changing performance measurements as clients' needs vary. Extraordinary efforts are made to adapt and convert client special needs into workable solutions with efficient cost and time considerations. EMR software allows for modifications that are not costly or complex.

OVERALL RANK	Q8 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
2	1	IBM	9.27	9.17	9.32	9.08	9.21
1	2	PHILIPS	8.36	8.39	9.20	8.23	8.55
3	3	YONYOU	8.76	8.26	8.28	8.19	8.42

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

CHINA

Integration and interfaces

Table 13: EHR vendor supports interfaces so information can be shared between necessary applications. Solutions are easily integrated to existing backend systems as needed and HIE feasible. Seamless interfaces to legacy applications are performed as required for optimal functioning. Human integration and interface activities are administered precisely. Systems communicate effectively among provider groups and ancillaries. True interoperability with other healthcare organizations is factored into implementation.

OVERALL RANK	Q9 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
2	1	IBM	8.57	8.41	8.94	8.88	8.60
1	2	PHILIPS	8.90	7.59	8.78	8.60	8.48
3	3	YONYOU	7.66	6.76	7.04	6.61	7.02

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

CHINA

Scalability, client adaptability, flexible pricing

Table 14: EHR services and solutions vendor provides flexible pricing allowing the client to choose and pay for the precise functionality and services needed. Vendor invests in significant infrastructure and has the ability to provide services to enterprise organizations. IT products and services meet the changing and varied needs of the EHR customer. Pricing is not rigid or shifting and meets needs of client.

OVERALL RANK	Q10 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	PHILIPS	9.59	9.53	9.67	9.78	9.64
3	2	YONYOU	8.86	8.92	9.01	8.23	8.76
2	3	IBM	7.33	6.55	8.01	8.28	7.54

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

CHINA

Vendor staff expertise, compensation and employee performance

Table 15: EHR vendor team of employees is considered top in industry for professionalism and skill. Vendor attracts and retains high performing staff. Vendor is focused on building and developing a strong employee team of producers. Employees act like owners/leaders. Company is moving towards leveraged pay at all levels. Vendor is using effective tools to tie performance metrics to compensation policy and compensating top leaders. Human resources-related criteria are scored from the client perspective on this indicator.

OVERALL RANK	Q11 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
2	1	IBM	8.56	9.48	9.63	8.81	9.12
3	2	YONYOU	8.85	9.57	8.83	9.02	9.07
1	3	PHILIPS	8.86	8.98	9.03	9.28	9.04

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

CHINA

Reliability

Table 16: EHR supplier meets agreed terms as evidenced by routine, acceptable service level reporting and industry expectations. Depth and breadth of applications/solutions are acceptable in meeting client needs. Online reliability meets expectations and outages/downtimes are minimized. Solid product and service capacities are demonstrated consistently. Service levels are consistently met as agreed. Services and support response is expedient and resources are appropriately provided by vendor team.

OVERALL RANK	Q12 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	PHILIPS	9.36	9.63	9.65	9.37	9.50
2	2	IBM	9.24	9.29	8.98	9.24	9.19
3	3	YONYOU	9.47	9.45	8.65	9.20	9.19

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

CHINA

Brand image and marketing communications

Table 17: EHR vendor’s marketing and sales statements/pitches are accurately and appropriately represented by actual EMR product and service deliverables. Image is consistent with top EHR rankings. Sales presentations and proposals are delivered upon and corporate integrity/honesty in marketing and business development are highly valued. Company image and integrity are values upheld top-down consistently. Elevated level of relevant client communications enhances the EHR vendor – EHR user relationship.

OVERALL RANK	Q13 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	PHILIPS	9.71	9.67	9.48	9.69	9.64
2	2	IBM	9.43	9.57	9.74	9.42	9.54
3	3	YONYOU	7.52	6.65	7.60	7.04	7.21

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

CHINA

Marginal value adds

Table 18: Beyond stimulus achievement, EHR vendors' cost savings are realized as generally estimated and not over-positioned or over/underestimated in ways that effect major client satisfaction or costs. Vendor offers value-adds as a practice management partner in cost savings and avoidance initiatives and creative programs through bundled EMR product design. Provides true business transformation opportunities to physician practices and other medical settings utilizing EHR.

OVERALL RANK	Q14 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
3	1	YONYOU	9.10	8.67	9.55	9.00	9.08
2	2	IBM	8.84	7.34	8.89	8.70	8.44
1	3	PHILIPS	8.76	9.01	7.81	7.92	8.38

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

CHINA

Viability and managerial stability

Table 19: Vendor’s viability, employee turnover, financial stability and/or cultural mismatches do not threaten relationship. Senior management and the board exemplify strong leadership principals to steward appropriate resources that impact EHR buyers. Client is confident of long term industry viability for this vendor based on investments, client adoption, exceptional outcomes and service levels. Field management is notably competent, stable and supportive of clients. EHR vendor demonstrates and provides evidence of competent fiscal management and leadership.

OVERALL RANK	Q15 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	PHILIPS	9.68	9.44	9.62	9.46	9.55
2	2	IBM	9.44	9.58	9.59	9.51	9.53
3	3	YONYOU	6.16	6.29	6.46	6.31	6.31

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

CHINA

Data security and backup services

Table 20: In order to provide secure and constantly dependable EMR service offerings for physician and hospital/IDN affiliate practices and entities, an EHR vendor has to provide the highest level of security and data back-up services. EHR vendor's service in these two areas is superior to the security and back-up system of past internal systems of the physician practice.

OVERALL RANK	Q16 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	PHILIPS	8.60	8.94	7.90	9.16	8.65
3	2	YONYOU	9.06	8.75	8.11	8.55	8.62
2	3	IBM	8.80	8.71	7.80	8.97	8.57

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

CHINA

Support and customer care

Table 21: Account management provides an adequate amount of onsite administration and support to clients. There exists a formal EHR account management program that meets client needs. Media and clients reference this vendor as an EMHR services leader and top vendor correctly. Customer services and relationship satisfaction is manifested through significant flagship clients as well as smaller and newest customers similarly. Vendor provides appropriate number of accessible support and customer care personnel.

OVERALL RANK	Q17 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	PHILIPS	9.62	9.35	9.61	9.60	9.55
3	2	YONYOU	9.04	8.84	8.16	8.80	8.71
2	3	IBM	8.76	8.90	8.30	8.79	8.69

Source: Black Book™ 2019

INDIVIDUAL EHR VENDOR KEY PERFORMANCE

CHINA

Best of breed technology and process improvement developments

Table 22: EHR management and related technology services are considered best of breed. EHR Vendor technology elevates customers via capabilities, equipment, processes, deliverables, professional staff, leadership, quality assurance and innovative initiatives. EHR services are delivered at or above current/former in-house service levels. Technology is current and relevant to exchanging health information among providers, as well as sufficiently offering patient access.

OVERALL RANK	Q18 CRITERIA RANK	EHR COMPANY	PATIENT HEALTH DATA MANAGEMENT & ADMINISTRATIVE PROCESSING	COMMUNICATIONS & CONNECTIVITY	ORDER ENTRY & MANAGEMENT	DECISION SUPPORT & RESULTS REVIEW/ MANAGEMENT	MEAN
1	1	PHILIPS	8.96	9.36	9.31	8.65	9.07
2	2	IBM	8.40	8.84	9.36	9.08	8.92
3	3	YONYOU	8.97	8.77	8.72	9.00	8.87

Source: Black Book™ 2019

Appendix I: United States of America

EHR Status

Since 2008, physician adoption of any EHRs has more than doubled, from 42% to 86%. As of 2017, nearly 86% of physicians had adopted an EHR.

Now that national policy and guidelines have been developed for EHR vendors and medical facilities, the initial stages of EHR implementation and optimization should be focused on single medical facilities and hospitals. In order to successfully optimize this complex technology and eventually address the difficult task of interoperability across the country, individual systems must be fully operational, and all medical professionals need to have a firm understanding of how this technology works.

In the 2018 Stanford Medicine-Harris poll, doctors report that more than 60% of their time spent on behalf of patients is actually devoted to interacting with EHRs. Half of primary care physicians think using an EHR actually detracts from their clinical effectiveness.

As good as the EHRs are as they exist right now, they're not nearly as intuitive as they should be. They actually can get in the way of the patient-doctor interaction. As the article states, "... as a nation, we are taking our doctors and nurses and making them into data-entry clerks". "It's not fun, it contributes to burnout, [and] it's non-value-added time".

Nearly three-quarters of doctors in the poll say the first order of business should be improving the user interface of EHRs to enhance efficiency and reduce screen time. Half want to see data entry shifted to support staff and 38% would welcome a highly accurate voice recording technology that would act as a scribe during patient visits.

The top area of interest among respondents was interoperability, the need to make patient data available easily and readily to professionals from all parts of the health care system for the benefit of the patient. More than two-thirds of doctors listed this as the number one issue to fix in the long term. To do that, we have to have a radically different health IT infrastructure; one that promotes data sharing and is open to developers.

After reviewing twelve nations at various stages of EHR implementation, multiple recommendations and considerations were gathered for the U.S. and its quest for successful EHR implementation and optimization.

- Health care providers and hospitals must focus on successful internal implementation and ensure that their EHR technology works to its fullest capability.
- Successful implementation and optimization of EHR technology in medical facilities requires the strong leadership and the involvement of the entire hospital staff.
- The government needs to focus more on planning how to successfully protect patients' privacy and transmit EHR information between states while abiding by all federal and state privacy laws.
- All states and territories must join the Health Information Security and Privacy Collaboration (HISPC) and work with each other and the government to ensure that EHR technologies around the country are able to successfully transmit information within and between states.

These recommendations will help make implementation and optimization a more successful process for medical facilities and providers in the U.S. Reviewing the various strategies that other nations are pursuing in terms of nationwide EHR development allows the U.S. to learn from past mistakes and successes.

Knowledge would flow not only to the clinician that is caring for a particular patient, but also to public health officials interested in the population at large. We can imagine a future where EHRs are part of a rich, seamless data stream that facilitates doctor-patient rapport even as it delivers real-time diagnostic support. Clinicians would be free to do what they do best: use their brains and interact with other human beings.¹

Market Dynamics

Aging and growing populations, greater prevalence of chronic diseases, exponential advances in innovative, but costly, digital technologies, these and other developments continue to increase health care demand and expenditures. Health care stakeholders like providers, governments, payers, consumers, and other companies/organizations struggling to manage clinical, operational, and financial challenges envision a future in which new business and care delivery models, aided by digital technologies, may help to solve today's problems and to build a sustainable foundation for affordable, accessible, high-quality health care.

On February 17, 2009, the HITECH Act, part of the American Recovery and Reinvestment Act, was signed into law and gave health care providers and hospitals further incentive to adopt EHR technology that would not only enhance their hospitals and private practices, but also allow for better quality care and reduced healthcare costs in the long term. Though the Patient Protection and Affordable Care Act (ACA) has expanded health insurance to millions of previously uninsured Americans and further increased the push for EHR technology.

All told, the federal government spent about \$35 billion on bringing the U.S. health care industry into the electronic age. The program was highly successful in that it made EHRs commonplace. Today, 90% doctors have adopted them. The United States has made a colossal transformation in a relatively short period of time.

As of right now some clinicians are in the dark regarding features they needed because they didn't get adequate training at the outset, or they weren't brought up to speed when new systems were rolled out or incremental changes were made. Health care leaders need to maintain the talent continuum that offers resources for redefined roles of the health care practitioners. Providers should proactively seek opportunities for augmentation and automation in clinical workflows, which will allow clinicians and patients to benefit from an aligned financial reimbursement system, new technologies, innovative talent models, and extended locations where care is delivered.

Regulations are being put in place that will put patients in control of their own health records and facilitate the sharing of data among health care organizations. Engineers are developing artificial intelligence technology that can "take notes" for physicians, summarize the important points from a patient's record, and assist in medical decision making. Apple's recent app for medical information, which gives third-party developers the ability to pull information from health records, is expected to be the first of many developments that brings health care data to patients' fingertips.²

Constraints

As implemented today in the U.S., EHRs have too many of the drawbacks of paper records. The promise of being able to send them easily from one office to the next has been hampered by a lack of standards and obstructive incentives in the health care marketplace to hoard information. Worse, EHRs, with their cumbersome user interfaces and troublesome billing requirements, have become a burden to doctors and nurses, contributing to burnout and information overload among physicians, and degrading patient care. A clinician will make roughly 4,000 keyboard clicks during a busy 10-hour emergency-room shift.

Perhaps the biggest disappointment of EHRs is that they are still to a large degree, static. Although they store data electronically, that data is still trapped within the institutions that gather it. The next step in the digitization of health care is to free up this information in ways that enhance patient health while protecting privacy.

In other words, the information in EHRs should pass seamlessly among health care organizations and patients. This includes all the ways patient records are currently exchanged among providers and payers and patients, but also new ways that would enhance patient care. For instance, a way to enhance patient care would be to eliminate unnecessary tests. Whenever a blood test is done because the records of a previous test were unavailable, or whenever an x-ray is taken because a previous image was not readily available, patients are exposed to undue risks.

A lack of available information also makes it more difficult to make good medical decisions. Physicians are often in the dark about what their patients do after they leave the examination room. A doctor may not know, for instance, whether a patient with diabetes has filled a prescription for insulin, even though this information is critical to the patient's health. Typically, information does not go back from pharmacy to doctor. There's no feedback loop.¹

Opportunities

While hospitals and health care providers are focusing on fully optimizing this technology internally, the government and state officials should begin collaborating on how to make interoperability successful and allow this technology to abide by all state privacy laws.

The creation of the Health Information Security and Privacy Collaboration (HISPC) in 2006 was the first step in successful collaboration between states and planning the final stage of interoperability between different EHR systems amidst a myriad of privacy laws. Though the creation of this group is a step in the right direction, it still only includes 42 of the 50 states. In order for the government and states to begin working together and accomplish the difficult task of establishing interoperability amid the many different privacy laws, all states need to be members of the HISPC in order to achieve full interoperability. In addition, the government and state officials may need to reexamine HIPAA if certain federal privacy laws hinder the overall process of EHR interoperability.

Once healthcare facilities have implemented their EHR system to their full capabilities, interoperability between systems across state lines will roll out much more efficiently because the government and states officials planned and ensure that this technology adhered to both federal and state privacy laws. In order for these systems to work, the government needs to stress that in order for health professionals and hospitals to receive the full benefits of this technology, they must be involved in the implementation process. Many EHR implementations have failed due to lack of involvement and leadership. This process should not just involve the IT team. All medical professionals need to learn and understand the EHR system that has been implemented in their medical facility. It should also be stressed that adapting to a new EHR system is not easy and it requires patience and extra time in the initial learning stages, but there are many long-term rewards after successful implementation and optimization.³

Citations

¹ Stanford Medicine. *White Paper: The Future of Electronic Health Records*. September 2018. Web. 13 June 2019. <http://med.stanford.edu/content/dam/sm/ehr/documents/EHR-White-Paper.pdf>

² Burrill, Steve and Doug Beaudoin. *2019 US and Global Health Care Industry Outlook*. USA, 2019. Web. 13 June 2019. <https://www2.deloitte.com/us/en/pages/life-sciences-and-health-care/articles/us-and-global-health-care-industry-trends-outlook.html>

³ Eddy, Nathan. *Health Systems Look to Tech to Improve Efficiency, Interoperability*. USA, 2019. Web. 13 June 2019. <https://www.healthcareitnews.com/news/health-systems-look-tech-improve-efficiency-interoperability>

Appendix II: United Kingdom/Ireland

Note: Performed separately Q4 2018 – Q1 2019

EHR SATISFACTION: BLACK BOOK KEY PERFORMANCE INDICATORS OVERALL SUMMARY Q1 2019																				
Rank	Vendor	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Mean
1	ALLSCRIPTS	9.59	9.23	9.43	9.53	9.30	9.06	9.21	9.39	9.28	9.61	9.60	9.33	9.31	9.65	8.29	9.35	9.54	9.81	9.36
3	EPIC SYSTEMS	8.59	9.17	8.54	8.57	9.09	8.67	9.52	8.65	9.15	8.95	8.67	8.68	9.40	8.60	9.09	8.83	9.01	8.88	8.89
4	CERNER	8.96	8.40	8.66	8.55	8.79	9.53	8.84	9.41	9.13	8.51	8.45	8.86	8.28	9.09	7.94	8.81	7.82	9.08	8.73
5	MEDITECH	8.58	8.96	9.05	8.87	9.15	9.04	8.58	8.03	8.91	7.79	8.74	8.48	9.54	7.84	8.50	8.50	9.12	8.70	8.69
8	INTERSYSTEMS	7.30	8.74	8.64	8.41	8.83	8.47	8.13	8.98	8.01	8.11	8.26	8.68	8.07	8.99	8.30	7.63	8.79	8.78	8.40

Black Book market research surveys & it user polling

We hope that the data and analysis in this report will help you make informed and imaginative EMR/EHR business decisions. If you have further requirements, the Black Book research team may be able to help you. For more information about Black Book's custom survey capabilities, please contact us directly at info@blackbookmarketresearch.com

Universally sourced throughout this document:

- The Commonwealth Fund
- United States Central Intelligence Agency World Fact Book 2019

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