MARYLAND HEALTH CARE COMMISSION

Health Information Technology

An Assessment of Freestanding Ambulatory Surgical Centers

July 2012

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Overview

The Maryland Health Care Commission (MHCC) developed the *Freestanding Ambulatory Surgical Center Health Information Technology Survey* (survey) to assess the current health information technology (health IT) adoption and planning efforts among Freestanding Ambulatory Surgical Centers (FASCs or Centers) in Maryland.[1] The widespread adoption and effective use of health IT has the potential to improve health care quality, prevent medical errors, and reduce costs. Assessing the Centers' adoption of health IT is the key to understanding the progress Maryland is making in maximizing the advantages of this technology. This is the third year the MHCC has surveyed FASCs; currently, 335 Centers are operating in Maryland. Centers were asked to report on whether or not they used technology, in general, to manage patient health information. They were also asked about their use of or plans to implement certain health IT functions including: computerized provider order entry (CPOE); electronic health records (EHRs); electronic medication administration records (eMARs); barcode medication administration (BCMA); infection surveillance software (ISS); electronic prescribing (e-prescribing); and electronic health information exchange (HIE) with laboratories, diagnostic centers, and outpatient physicians.[2]

Adoption

In 2011, approximately 42 percent of Centers reported using some form of technology to manage patient health information, an increase of about 5 percent from 2010. Roughly 34 percent of FASCs report using at least one of the above mentioned health IT functionalities, around a 6 percent increase from 2010. Adoption rates in seven of the nine health IT functions exceed at least 30 percent among Centers who use health IT. Most notably, roughly 83 percent of FASCs reported adopting an EHR and about 54 percent reported e-prescribing. Additionally, about 20 percent exchange data electronically with outside providers. Increases in adoption from 2009 were reported in eight of the nine health IT functions, with the highest increase in the adoption of EHR, at around 26 percent, and CPOE and e-prescribing, which increased by roughly 19 and 17 percent, respectively.

Survey responses were analyzed to determine differences between Centers within specific geographic regions[3] and between single specialty and multi-specialty Centers. FASCs within the Southern Maryland area reported greater adoption rates for CPOE, EHR, eMAR, and electronic data exchange with laboratories and diagnostic centers than any other region. Centers in the Baltimore region reported greater adoption rates for ISS and e-prescribing than Centers in any other region. Single specialty FASCs report greater adoption rates for all health IT functionalities except for ISS. Among all health IT functionalities, EHR adoption continues to exceed all other functions, regardless of geography and specialty, ranging from about 100 percent adoption among Southern Maryland Centers to roughly 68 percent among multi-speciality FASCs.

Planning

Centers that have not adopted a particular health IT component were asked to identify their 12-month planning activites either as assessing, implementing, or undecided. Centers planning to assess or implement BCMA and electronic health information exchange with laboratories reported a sizable increase as compared to the other health IT categories. While no Center reported having adopted BCMA this year, approximately 10 percent of FASCs reported plans to assess or implement BCMA in the next

[1] FASCs are facilities, not part of a hospital, which provide surgical treatment to patients not requiring hospitalization in addition to pre and post-operative ambulatory surgery care.

[2] See Appendix A for a glossary of terms and abbreviations frequently used throughout this report.

[3] See Appendix B for specific geographic regions and associated counties.

12 months, an increase of about 38 percent since 2009. Additionally, around 28 percent of Centers that are not currently exchanging data with laborotories are planning to exchange data with laboratories within the next 12 months, an increase of about 8 percent over two years.

Methodology

The MHCC developed the *Freestanding Ambulatory Surgical Center Health Information Technology Survey* (survey) in collaboration with the Maryland Ambulatory Surgical Association (MASA).[4] Survey questions are used to assess Centers' current health IT adoption and any anticipated future plans to adopt health IT. FACSs are asked to complete this survey annually. Centers were asked if they use technology to manage patient health information, in general, and then more specific questions regarding their adoption of key health IT functionalities that include CPOE; EHRs; eMARs; BCMA; ISS; e-prescribing; and electronic HIE with laboratories, diagnostic centers and outpatient providers.

Limitations

The information used to develop this report was obtained from Center responses to a self-reported survey and have not been fully audited for accuracy. The data represented in this report reflects health IT adoption and does not measure the FACSs use of particular health IT functions. The information included in the report is limited to Maryland Centers as national data on health IT is not available. Responses from two Centers are not included in the report.

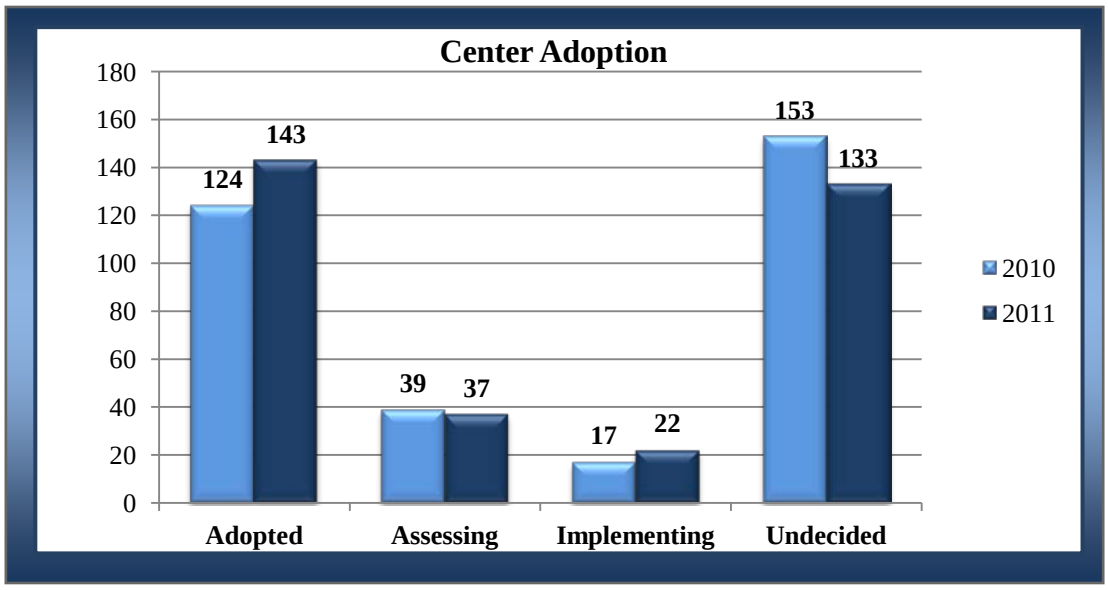
Acknowledgements

The MHCC appreciates the continuing assistance provided by the Maryland Ambulatory Surgical Association (MASA) in developing and finalizing this report. In particular, the MHCC thanks Ms. Andrea Hyatt, President of MASA for her assistance in the report development. A special thanks to the FASCs for their time and effort in completing the 2011 survey.

[4] See Appendix C for the *Survey Questions*.

Overall Health IT Adoption

Generally, ambulatory surgical centers have lower health IT adoption rates as compared to hospitals due to their smaller size, having fewer practitioners and less available capital.[5] During the 2011 reporting period, Maryland hospitals reported a health IT adoption rate of about 70 percent,[6] compared to about 34 percent of Maryland FASCs. Maryland Centers adopting some form of health IT increased by 19 centers, a 5 percent increase from 2010. Centers not using health IT were asked to report their 12-month planning efforts. The number of Centers planning to implement some form health IT increased by about 11 percent from 2010, while the number of Centers assessing some form of technology to manage patient care has decreased by about 2 Centers from 2010. Those Centers who are undecided about implementing some form of health IT decreased by about 4 percent since 2010.



The following table illustrates the adoption rates of specific health IT functions among all Centers for 2009, 2010, and 2011. Among all health IT functions in 2011, CPOE, EHR, and e-prescribing had the highest adoption rate at roughly 18 percent or more. In 2011, electronic data exchange with laboratories, diagnostic centers, and community providers was reported to have been adopted by at least 7 percent of Centers. In general, FASCs are steadily increasing their adoption of health IT across all functionalities, as the number of Centers adopting technology increased in seven of the nine health IT functionality since 2009.

[5] Becker's ASC Review, *Factors Influencing Health Information Technology Adoption: A Focus on Ambulatory Surgery Centers*, May 2010. Available at: http://www.beckersasc.com/news-analysis/factors-influencing-health-information-technology-adoption-a-focus-on-ambulatory-surgery-centers.html

[6] Maryland Health Care Commission. *Health Information Technology: An Assessment of Maryland Hospitals.* June 2012.

Adoption by Function # (%)				
Health IT Function	**2009** *(N=325)*	**2010** *(N=333)*	**2011** *(N=335)*	**Change** *(% change)*
Computerized Provider Order Entry	41 (12)	44 (13)	65 (19)	24 (7)
Electronic Health Record	62 (19)	77 (23)	95 (28)	33 (9)
Electronic Medication Administration Record	37 (11)	36 (11)	42 (13)	5 (2)
Barcode Medication Administration	1 (0)	-	-	-1 (-1)
Infection Surveillance Software	37 (11)	37 (11)	43 (13)	6 (2)
Electronic Prescribing (e-prescribing)	40 (12)	43 (13)	61 (18)	21 (6)
Electronic Data Exchange w/ Laboratories	44 (13)	42 (13)	47 (14)	3 (1)
Electronic Data Exchange w/ Diagnostic Centers	31 (9)	34 (10)	38 (11)	7 (2)
Electronic Data Exchange w/ Outpatient Providers	22 (7)	22 (7)	23 (7)	1 (0)

Center Progress

The remaining sections of the report highlight adoption and planning efforts among those Centers that reported to have adopted at least one of the nine health IT functionalities. In general, adoption rates reached 20 percent or more for nearly all health IT functions. Centers using EHRs increased by about 26 percent since 2009; the largest increase among all health IT functions. The adoption of CPOE functionality increased by about 19 percent since 2009, and e-prescribing increased approximately 17 percent. In 2011 electronic data exchange with laboratories, diagnostic centers, and community providers was reported to have been adopted by at least 20 percent of Centers using health IT. Since 2009, data exchange with community providers remained the same, while the number of Centers exchanging electronic data exchange with diagnostic centers increased by about 5 percent.

Adoption by Function # (%)				
Health IT Function	**2009** *(N=109)*	**2010** *(N=94)*	**2011** *(N=114)*	***Change*** *(% change)*
Computerized Provider Order Entry	41 (38)	44 (47)	65 (57)	24 (19)
Electronic Health Record	62 (57)	77 (82)	95 (83)	33 (26)
Electronic Medication Administration Record	37 (34)	36 (38)	42 (37)	5 (3)
Barcode Medication Administration	1 (1)	0 (0)	-	-1 (-1)
Infection Surveillance Software	37 (34)	37 (39)	43 (38)	6 (4)
Electronic Prescribing (e-prescribing)	40 (37)	43 (46)	61 (54)	21 (17)
Electronic Data Exchange w/ Laboratories	44 (40)	42 (45)	47 (41)	3 (1)
Electronic Data Exchange w/ Diagnostic Centers	31 (28)	34 (36)	38 (33)	7 (5)
Electronic Data Exchange w/ Outpatient Providers	22 (20)	22 (20)	23 (20)	1 (0)

Computerized Physician Order Entry

CPOE allows providers and staff to directly enter medical orders into a computer system. Orders are integrated with patient information which improves health care efficiencies by preventing errors due to illegible handwriting, warns providers against the possibility of a drug or allergy interaction or overdose, and provides physicians with information to help them stay current with new drugs as they are introduced to the market.[7] Approximately 57 percent of Centers reported having adopted CPOE in 2011, an increase of about 19 percent since 2009. Centers that are undecided in adopting CPOE have decreased by about 4 percent, while those Centers currently assessing this technology in the next 12 months decreased by roughly 1 percent. One Center reported plans to implement CPOE in the next 12 months.[8]

Comparison of CPOE Adoption # (%)				
Adoption Status	**2009** *(N=109)*	**2010** *(N=94)*	**2011** *(N=114)*	**Change** *(% change)*
Yes	41 (38)	44 (47)	65 (57)	24 (19)
No	68 (62)	50 (53)	49 (43)	-19 (-19)
Planning				
Assessing	14 (21)	8 (16)	10 (20)	-4 (-1)
Implementing	4 (6)	2 (4)	1 (2)	-3 (-4)
Undecided	50 (74)	40 (80)	38 (78)	-12 (-4)

Clinical Decision Support

Clinical Decision Support (CDS) provides patients, clinicians, staff and other individuals with information that is tailored to the specific patient and presented at appropriate times to enhance health care delivery.[9] Examples of CDS tools include pop-up alerts regarding the potential of drug interactions when a physicians prescribes a new medication; clinical guidelines for the treatment of a specific condition; and reminders for timely follow-up. CDS can include nationally recommended guidelines for a given condition, as well as customized order sets designed by an individual clinician.[10] Although EHRs with CPOE can improve accessibility and legibility of information, it is unlikely that there will be major improvements in the quality and cost of care from the use of health IT without proper implementation of CDS.[11] In 2011, of the 65 Centers using CPOE technology, roughly 83 percent are using CDS for medications, which includes drug interactions with current medications; drug interactions with food; and dose limitations for specific diagnoses, allergies, age, weight, or test results. Approximately 29 percent of Centers using CPOE use CDS for diagnosis, which includes standards of care (SOC) and chronic conditions. Since 2009, the use of Medication CDS among Centers implementing CPOE increased roughly 3 percent, while 10 additional Centers adopted Diagnosis/SOC CDS.

[7] The Leapfrog Group, *Computerized Physician Order Entry Factsheet*, March 2011. Available at: http://www.leapfroggroup.org/media/file/FactSheet_CPOE.pdf.
[8] This specific finding was audited for quality and found to be valid.
[9] Healthcare Information and Management Systems, *Clinical Decision Support*, January 2012. Available at: http://www.himss.org/ASP/topics_clinicalDecision.asp.
[10] University of Alabama at Birmingham Department of Health Services Administration, *Clinical Decision Support Systems: State of the Art*, June 2009. Available at: http://healthit.ahrq.gov/images/jun09cdsreview/09_0069_ef.html.
[11] Ibid

Comparison of CDS Integration # (%)				
Health IT Function	**2009** *(N=41)*	**2010** *(N=44)*	**2011** *(N=65)*	**Change** *(% change)*
Medication CDS	33 (80)	35 (80)	54 (83)	21 (3)
Diagnosis/SOC CDS	9 (22)	9 (20)	19 (29)	10 (7)

Electronic Health Records

EHRs are medical records in a digital format used to review and store a patient's medical information. EHRs store patient information including, demographics, progress notes, medication history, vital signs, past medical history, immunization, laboratory data and radiology reports. The data available within an EHR, and the timeliness of its availability, enable providers to deliver higher quality and more efficient patient care.[12] In 2011, roughly 83 percent of Centers reported adopted an EHR, an increase of approximately 26 percent from 2009.

Comparison of EHR Adoption # (%)				
Adoption Status	**2009** *(N=109)*	**2010** *(N=94)*	**2011** *(N=114)*	**Change** *(% change)*
Yes	62 (57)	77 (82)	95 (83)	33 (26)
No	47 (43)	17 (18)	19 (16)	-28 (-27)
Planning				
Assessing	14 (30)	6 (35)	6 (32)	-8 (-2)
Implementing	3 (6)	4 (24)	1 (5)	-2 (-1)
Undecided	30 (64)	11 (65)	12 (63)	-18 (-1)

Electronic Medication Administration Records

eMARs are designed to replace traditional paper medication administration records and provide hospital staff with an electronic record of the medications ordered and administered. The goal of eMARs is to improve patient safety by helping clinicians reduce medication errors. In 2011, Centers reported an eMAR adoption rate of around 37 percent. Between 2009 and 2011 adoption rates increased approximately 3 percent. Among those Centers surveyed in 2011 without eMAR, roughly 18 percent reported they are planning to assess or implement eMAR technology, and about 82 percent are undecided.[13]

[12] Centers for Medicare & Medicaid Services, *Fact Sheet: Electronic Health Records at a Glance*, July 2010. Available at: https://www.cms.gov/EHRIncentivePrograms/.

[13] One Center that reported plans to implement an EHR in the next 12-months was audited for quality and found to be valid.

Comparison of eMAR Adoption # (%)				
Adoption Status	**2009** *(N=109)*	**2010** *(N=94)*	**2011** *(N=114)*	**Change** *(% change)*
Yes	37 (34)	36 (38)	42 (37)	5 (3)
No	72 (66)	58 (62)	72 (63)	0 (-3)
Planning				
Assessing	12 (17)	13 (22)	12 (17)	0 (0)
Implementing	4 (6)	1 (2)	1 (1)	-3 (-5)
Undecided	56 (78)	44 (76)	59 (82)	3 (4)

Barcode Medication Administration

BCMA helps to prevent errors that may occur with dispensing medications to a patient. Similar to last year, no Center reported having adopted BCMA. This technology is primarily used in inpatient hospital settings; however, some outpatient centers have found value in using BCMA technology in an effort to reduce medication errors at the ordering step.[14] Centers planning to assess or implement BCMA was reported at about 10 percent in 2011, an increase of approximately 3 percent since 2009.[15] Roughly 90 percent of Centers are undecided in adopting this technology, a decrease of about 3 percent since 2009.

Comparison of BCMA Adoption # (%)				
Adoption Status	**2009** *(N=109)*	**2010** *(N=94)*	**2011** *(N=114)*	**Change** *(% change)*
Yes	1 (1)	-	-	-1 (-1)
No	108 (99)	94 (100)	114 (100)	6 (1)
Planning				
Assessing	7 (6)	9 (10)	9 (8)	2 (2)
Implementing	1 (1)	14 (15)	2 (2)	1 (1)
Undecided	100 (93)	71 (76)	103 (90)	3 (-3)

Infection Surveillance Software

ISS allows Centers to automate infection monitoring by providing staff with the ability to electronically track and evaluate post operative infection trends. Lapses in infection control in any health care setting, including Ambulatory Surgical Centers, put patients at risk. Historically, infection surveillance has focused on inpatient hospitals; however, recent steps have been taken to improve surveillance in Centers as the number of outpatient procedures performed continues to grow.[16] In 2008, Maryland participated in a pilot project to incorporate an infection control audit tool for ambulatory surgical centers, based on

[14] U.S. Department of Veterans Affairs, *Raising the Safety Bar: Using BCMA for Outpatient Antineoplastic Administration*, 2007. Available at: www1.va.gov/vehu/vehu2007/ppt/9908_LL.ppt

[15] Two Centers that reported plans to implement BCMA in the next 12-months was audited for quality and found to be valid.

[16] U.S. Department of Health & Human Services, *HHS Action Plan to Prevent Healthcare-Associated Infections: Ambulatory Surgical Centers*, June 2010. Available at: http://www.hhs.gov/ash/initiatives/hai/tier2_ambulatory.html.

CDC guidelines.[17] Between 2009 and 2011, there was about a 4 percent increase in ISS adoption. In 2011, Centers planning to assess ISS was roughly 21 percent, a decrease of approximately 7 percent since 2009. One Center reported to be planning to implement in the next 12-months.[18] The number of Centers that were undecided about adopting ISS applications increased from 2009 by approximately 9 percent.

Comparison of ISS Adoption # (%)				
Adoption Status	**2009** *(N=109)*	**2010** *(N=94)*	**2011** *(N=114)*	**Change** *(% change)*
Yes	37 (34)	37 (39)	43 (38)	6 (4)
No	72 (66)	57 (61)	71 (61)	-1 (-5)
Planning				
Assessing	20 (28)	12 (21)	15 (21)	-5 (-7)
Implementing	3 (4)	1 (2)	1 (1)	-2 (-3)
Undecided	49 (68)	44 (77)	52 (77)	6 (9)

Electronic Prescribing

e-Prescribing technologies can reduce medication errors and streamline the billing process for providers by allowing a prescriber to electronically send an accurate and understandable prescription directly to a pharmacy from the point-of-care site.[19] According to a study conducted by the Center for Studying Health System Change (HSC), medical and surgical specialists were less likely to adopt and routinely use e-prescribing than primary care physicians.[20] The HSC found that some of this variation may be related to the higher rates of EHR adoption in larger practices. When considering only physicians using EHRs exclusively, differences in e-prescribing rates narrowed substantially across specialties. In Maryland, a little over half of the Centers reported that they e-prescribe to community pharmacies, an increase of about 17 percent from 2009. Centers planning to assess and implement within the next 12 months have increased since 2009 by around 16 percent and Centers that are undecided have decreased from 2009 by about 15 percent.

Comparison of e-Prescribing w/Community Pharmacies # (%)				
Adoption Status	**2009** *(N=109)*	**2010** *(N=94)*	**2011** *(N=114)*	**Change** *(% change)*
Yes	40 (37)	43 (46)	61 (54)	21 (17)
No	69 (63)	51 (54)	53 (46)	-16 (-17)
Planning				
Assessing	13 (19)	12 (24)	13 (25)	0 (6)
Implementing	6 (9)	7 (14)	10 (19)	4 (10)
Undecided	50 (72)	32 (63)	30 (57)	-20 (-15)

[17] Ibid.
[18] This specific finding was audited for quality and found to be valid.
[19] Centers for Medicare & Medicaid, *E-Prescribing Overview*, June 2011. Available at: https://www.cms.gov/EPrescribing/.
[20] Center for Studying Health System Change, *Even When Physicians Adopt e-Prescribing, Use of Advanced Features Lags*, July 2010. Available at: http://www.hschange.com/CONTENT/1133/1133.pdf.

Electronic Data Exchange

Electronic data exchange allows providers in a health care setting to transmit data electronically from one location to another. During this reporting period, about 41 percent of Centers indicated that they are currently exchanging data with laboratories, an increase of about 1 percent since 2009. Centers that are planning to assess or implement data sharing with laboratories increased by about 8 percent since 2009. As the number of Centers planning has increased, the number of Centers that are undecided about sharing data electronically with laboratories decreased by about 2 percent since 2009.

Comparison of Data Sharing w/Laboratories # (%)				
Adoption Status	**2009** *(N=109)*	**2010** *(N=94)*	**2011** *(N=114)*	**Change** *(% change)*
Yes	44 (40)	42 (45)	47 (41)	3 (1)
No	65 (60)	52 (55)	67 (59)	2 (1)
Planning				
Assessing	9 (13)	10 (19)	13 (19)	4 (6)
Implementing	5 (7)	3 (6)	6 (9)	1 (2)
Undecided	51 (74)	39 (75)	48 (72)	-3 (-2)

Centers were also asked to report on their exchange of electronic patient information with diagnostic centers. Roughly 33 percent of Centers reported data sharing with diagnostic centers in 2011. FASCs that plan to assess the exchange of data with diagnostic centers increased by about 4 percent between 2009 and 2011, while Centers implementing decreased by about 7 percent. FACSs that are undecided remained the same from 2009 at about 58 Centers; one Center reported planning to implement in the next 12-months.[21]

Comparison of Data Sharing w/Diagnostic Centers # (%)				
Adoption Status	**2009** *(N=109)*	**2010** *(N=94)*	**2011** *(N=114)*	**Change** *(% change)*
Yes	31 (28)	34 (36)	38 (33)	7 (5)
No	78 (72)	60 (64)	76 (67)	-2 (-11)
Planning				
Assessing	14 (18)	14 (23)	17 (22)	3 (4)
Implementing	6 (8)	1 (2)	1 (1)	-5 (-7)
Undecided	58 (74)	45 (75)	58 (76)	0 (2)

[21] This specific finding was audited for quality and found to be valid.

As part of the survey, Centers reported on their exchange of electronic data with outpatient providers. During this reporting period, approximately 20 percent of Maryland FASCs stated that they were currently sharing data electronically with outpatient providers, which is approximately the same percentage of Centers as in 2009. Among the 91 FASCs that are not yet exchanging data electronically, approximately 88 percent are undecided about whether or not to participate in electronic data exchange, while about 12 percent of Centers plan to assess the technology to exchange data.

Comparison of Data Sharing w/Outpatient Providers # (%)				
Adoption Status	**2009** *(N=109)*	**2010** *(N=94)*	**2011** *(N=114)*	**Change** *(% change)*
Yes	22 (20)	22 (23)	23 (20)	1 (0)
No	87 (80)	72 (77)	91 (80)	4 (0)
Planning				
Assessing	7 (8)	8 (11)	11 (12)	4 (4)
Implementing	5 (6)	14 (19)	-	-5 (-6)
Undecided	75 (86)	50 (69)	80 (88)	5 (2)

Adoption by Region

Center health IT adoption varies between geographic regions in Maryland. In order to assess health IT adoption between regions of the state, the FASCs participating in the survey were divided based upon their geographic locations in Maryland. The five regions include: Baltimore, National Capital, Eastern Shore, Southern Maryland, and Western Maryland.[22] All Maryland regions reported using technology to manage patient health information, ranging from the lowest at 39 percent within the Baltimore region to the highest at 52 percent within the Western region. Similarly, all regions reported adopting at least one health IT functionality with Western Maryland having the highest rate at about 42 percent. Among all regions, the Eastern Shore region had the greatest percentage of Centers, at around 66 percent, that either plan to assess or implement technology to manage patient health information within the next 12 months; while the Baltimore region had the greatest percentage of Centers that are undecided about adopting health IT technology at this time at about 75 percent.

Adoption by Region # (%)					
Adoption Status	**Baltimore** *(N=166)*	**National Capitol** *(N=104)*	**Eastern Shore** *(N=18)*	**Southern Maryland** *(N=16)*	**Western Maryland** *(N=31)*
Manage Patient Health Information with Technology	65 (39)	46 (44)	9 (50)	7 (44)	16 (52)
Adopted a Key Health IT Function	52 (31)	36 (35)	7 (39)	6 (38)	13 (42)
Planning					
Assessing	15 (15)	13 (22)	4 (44)	1 (11)	5 (33)
Implementing	11 (11)	7 (12)	2 (22)	3 (33)	-
Undecided	75 (75)	38 (63)	3 (33)	5 (56)	10 (67)

Baltimore

Approximately half, of FASCs in the state are located in the Baltimore region. Among all health IT functions, EHRs continue to have the highest adoption rate for Baltimore Centers since 2009. Approximately 83 percent of Centers in the Baltimore region have adopted an EHR, an increase of roughly 27 percent from 2009. In addition to EHRs, the next two health IT functions implemented by most Centers was e-prescribing at about 71 percent and CPOE at around 56 percent. The lowest adoption rate among all health IT functions was BCMA; no center in the Baltimore region adopted BCMA at the time of the 2011 survey. Baltimore Centers reported the highest adoption rate for ISS and e-prescribing than any other region at approximately 42 percent and 71 percent respectively.

[22] See Appendix B for specific geographic regions and associated counties.

Baltimore Region # (%)				
Health IT Function	**2009** *(N=52)*	**2010** *(N=42)*	**2011** *(N=52)*	**Change** *(% change)*
Computerized Provider Order Entry	22 (42)	24 (57)	29 (56)	7 (14)
Electronic Health Record	29 (56)	38 (90)	43 (83)	14 (27)
Electronic Medication Administration Record	21(40)	20 (48)	23 (45)	2 (5)
Barcode Medication Administration	-	-	-	-
Infection Surveillance Software	14 (27)	18 (43)	22 (42)	8 (15)
Electronic Prescribing w/ Community Pharmacies	24 (47)	24 (57)	37 (71)	13 (24)
Electronic Data Exchange w/Laboratories	24 (46)	24 (57)	24 (46)	-
Electronic Data Exchange w/Diagnostic Centers	23 (44)	23 (55)	23 (44)	-
Electronic Data Exchange w/ Outpatient Providers	6 (12)	10 (24)	9 (17)	3 (1)

National Capital

The National Capitol region accounted for about 31 percent of the FASCs in Maryland. The EHR adoption rate exceeded all other health IT functions for National Capital Centers, similar to what was reported by Baltimore Centers. Since 2009, National Capital Centers adopting an EHR increased approximately 12 percent. CPOE had the second largest adoption rate among all health IT functions at about 43 percent, an increase of about 9 Centers since 2009.

National Capitol Region # (%)				
Health IT Function	**2009** *(N=27)*	**2010** *(N=28)*	**2011** *(N=36)*	**Change** *(% change)*
Computerized Provider Order Entry	7 (26)	10 (36)	16 (43)	9 (17)
Electronic Health Record	18 (67)	21 (75)	29 (79)	11 (12)
Electronic Medication Administration Record	8 (30)	12 (43)	8 (22)	0 (8)
Barcode Medication Administration	-	-	-	-
Infection Surveillance Software	12 (44)	7 (25)	14 (38)	2 (-6)
Electronic Prescribing w/ Community Pharmacies	7 (26)	12 (43)	12 (32)	5 (6)
Electronic Data Exchange w/Laboratories	8 (30)	9 (32)	14 (38)	6 (8)
Electronic Data Exchange w/Diagnostic Centers	-	4 (14)	5 (14)	5 (14)
Electronic Data Exchange w/ Outpatient Providers	8 (30)	7 (25)	8 (22)	0 (-8)

Eastern Shore

Approximately 5 percent of Maryland FASCs are located in the Eastern Shore region. Although few Centers are located in this region, Eastern Shore FASCs had adoption rates in 2011 for EHRs at about 86 percent, similar to the adoption rate reported by other regions. All Eastern Shore Centers reported in 2011 that they are not yet exchanging data electronically with outpatient providers. However, the number of Centers in the Eastern Shore adopting EHRs, CPOE, and e-prescribing increased over the last year.

Eastern Shore Region # (%)				
Health IT Function	**2009** *(N=10)*	**2010** *(N=12)*	**2011** *(N=7)*	**Change** *(% change)*
Computerized Provider Order Entry	2 (20)	3 (25)	5 (71)	3 (51)
Electronic Health Record	2 (20)	10 (83)	6 (86)	4 (66)
Electronic Medication Administration Record	2 (20)	3 (25)	1 (14)	-1 (-6)
Barcode Medication Administration	-	-	-	-
Infection Surveillance Software	3 (30)	4 (33)	2 (29)	-1 (-1)
Electronic Prescribing w/ Community Pharmacies	2 (20)	3 (25)	3 (43)	1 (23)
Electronic Data Exchange w/Laboratories	4 (40)	5 (42)	2 (29)	-2 (-11)
Electronic Data Exchange w/Diagnostic Centers	4 (40)	1 (8)	1 (14)	-3 (-26)
Electronic Data Exchange w/ Outpatient Providers	3 (30)	-	-	-3 (-30)

Southern Maryland

Centers in the Southern Maryland region accounted for roughly 5 percent of Maryland FASCs. Nearly all Southern Maryland Centers have adopted EHRs and approximately 83 percent of these Centers adopted CPOE, the highest adoption rate among all regions. eMAR, e-prescribing and electronic data exchange with diagnostic centers all reached adoption rates of nearly 67 for Southern Maryland Centers in 2011. Adoption remains delayed for Centers using applications often considered to be associated with advanced uses of health IT such as ISS or electronic data exchange with outpatient providers in 2011.

Southern Maryland Region # (%)				
Health IT Function	**2009** *(N=7)*	**2010** *(N=8)*	**2011** *(N=6)*	**Change** *(% change)*
Computerized Provider Order Entry	5 (71)	5 (63)	5 (83)	0 (12)
Electronic Health Record	5 (71)	6 (75)	6 (100)	1 (29)
Electronic Medication Administration Record	4 (57)	1 (13)	4 (67)	0 (10)
Barcode Medication Administration	-	-	-	-
Infection Surveillance Software	3 (43)	5 (63)	-	-3 (-43)
Electronic Prescribing w/ Community Pharmacies	3 (43)	3 (38)	4 (67)	1 (24)
Electronic Data Exchange w/Laboratories	2 (29)	3 (38)	3 (50)	1 (21)
Electronic Data Exchange w/Diagnostic Centers	3 (43)	4 (50)	4 (67)	1 (24)
Electronic Data Exchange w/ Outpatient Providers	1 (14)	3 (38)	-	-1 (-14)

Western Maryland

Western Maryland Centers account for approximately 9 percent of the FASCs throughout the state. The EHR adoption rate of Centers within the Western Maryland region is similar to Baltimore, National Capital, and Eastern Shore regions at around 85 percent. Again, EHR adoption exceeds all other health IT functions for Western Maryland Centers as well. CPOE adoption had the second highest adoption rate at about 77 percent. Approximately half, or around 46 percent, of Centers in Western Maryland exchange electronic data with outpatient providers, which is greater than any other region.

Western Maryland Region # (%)				
Health IT Function	**2009** *(N=13)*	**2010** *(N=4)*	**2011** *(N=13)*	**Change** *(% change)*
Computerized Provider Order Entry	5 (38)	2 (50)	10 (77)	5 (39)
Electronic Health Record	8 (6)	2 (50)	11 (85)	3 (79)
Electronic Medication Administration Record	2 (1)	-	6 (46)	4 (45)
Barcode Medication Administration	1 (8)	-	-	-1 (-8)
Infection Surveillance Software	5 (38)	3 (75)	5 (38)	0 (0)
Electronic Prescribing w/ Community Pharmacies	4 (31)	1 (25)	5 (38)	1 (7)
Electronic Data Exchange w/Laboratories	6 (46)	1 (25)	4 (31)	-2 (-15)
Electronic Data Exchange w/Diagnostic Centers	1 (8)	2 (50)	5 (38)	4 (30)
Electronic Data Exchange w/ Outpatient Providers	4 (31)	2 (50)	6 (46)	2 (15)

Adoption by Center Type

FASCs may provide services within a variety of specialties or may limit surgeries to one specialty. In general, health IT adoption presents challenges related to the costs associated with the purchase and implementation of Health IT technology. An assessment of health IT adoption by Center type was performed by comparing Centers providing care within a single specialty with Centers that provided care across more than one specialty.

Single-specialty Centers reported a higher rate of using health IT technology than multi-specialty Centers, at approximately 45 percent. These same Centers also had a higher rate in adopting at least one key function at about 37 percent. Approximately 36 percent of multi-specialty Centers report using technology to manage patient health information, while 25 percent report using health IT in at least one key function area. Among single-specialty Centers that are not using technology to manage patient health information, approximately 31 percent plan to assess or implement technologies within the next 12 months and 66 percent were undecided. About 26 percent of the multi-specialty Centers were assessing or planning to implement technology while approximately 73 percent were undecided.

Adoption by Center Type # (%)		
Adoption Status	**Single-Specialty** *(N=259)*	**Multi-Specialty** *(N=76)*
Manage Patient Health Information with Technology	116 (45)	27 (36)
Adopted a Key Function	95 (37)	19 (25)
Planning		
Assessing	27 (19)	11 (22)
Implementing	21 (15)	2 (4)
Undecided	95 (66)	36 (73)

Single Specialty

Approximately 77 percent of FASCs in Maryland are single-specialty Centers. Among single-specialty Centers in 2011, about 86 percent had implemented an EHR, which exceeds the adoption rate of all other health IT functionalities and is an increase of approximately 21 percent since 2009. Single-specialty Centers' adoption of CPOE increased by about 17 percent since 2009 and is implemented by roughly 61 percent of these Centers. Single-specialty Centers exceed multi-specialty Centers in their adoption of all health IT functionalities except ISS. About 34 percent of single-specialty Centers reported adopting this technology, while around 58 percent of multi-specialty Centers reported adopting ISS.

Single-Specialty # (%)				
Health IT Function	**2009** *(N=78)*	**2010** *(N=77)*	**2011** *(N=95)*	**Change** *(% change)*
Computerized Provider Order Entry	34 (44)	39 (51)	58 (61)	24 (17)
Electronic Health Record	51 (65)	66 (86)	82 (86)	31 (21)
Electronic Medication Administration Record	32 (41)	31 (40)	38 (40)	6 (-1)
Barcode Medication Administration	-	-	-	-
Infection Surveillance Software	20 (26)	27 (35)	32 (34)	12 (8)
Electronic Prescribing w/ Community Pharmacies	37 (47)	39 (51)	56 (59)	19 (12)
Electronic Data Exchange w/Laboratories	34 (44)	37 (48)	40 (42)	8 (-2)
Electronic Data Exchange w/Diagnostic Centers	27 (35)	33 (43)	36 (38)	9 (3)
Electronic Data Exchange w/ Outpatient Providers	14 (18)	18 (23)	19 (20)	5 (2)

Multi-Specialty

Multi-specialty Centers accounted for approximately 23 percent of Maryland FASCs. EHR and ISS had the largest adoption rate among multi-specialty Centers in 2011 at roughly 68 and 58 percent respectively. Compared to 2009, EHR adoption among multi-specialty Centers increased by about 33 percent, while the number of these Centers adopting ISS technology decreased by about 6 Centers. Electronic data exchange with diagnostic centers had the second lowest adoption rate among all health IT functions for multi-specialty Centers in 2011 at about 11 percent, a decrease of about 2 percent since 2009.

Multi-Specialty # (%)

Health IT Function	**2009** *(N=31)*	**2010** *(N=17)*	**2011** *(N=19)*	**Change** *(% change)*
Computerized Provider Order Entry	7 (23)	5 (29)	7 (37)	0 (14)
Electronic Health Record	11 (35)	11 (65)	13 (68)	2 (33)
Electronic Medication Administration Record	5 (16)	5 (29)	4 (21)	-1 (5)
Barcode Medication Administration	1 (3)	0 (0)	0 (0)	-1 (-3)
Infection Surveillance Software	17 (55)	10 (59)	11 (58)	-6 (3)
Electronic Prescribing w/ Community Pharmacies	3 (10)	4 (24)	5 (26)	2 (16)
Electronic Data Exchange w/Laboratories	10 (32)	5 (29)	7 (37)	-3 (5)
Electronic Data Exchange w/Diagnostic Centers	4 (13)	1 (6)	2 (11)	-2 (-2)
Electronic Data Exchange w/ Outpatient Providers	8 (26)	4 (24)	4 (21)	-4 (-5)

Remarks

The MHCC began tracking Center progress in adopting health IT in 2009. At around a 42 percent health IT adoption rate, room for growth exists; however, over the last several years Centers have made notable advancements in adopting health IT. Health IT adoption is expected to transform health care by enabling the secure collection and exchange of vast amounts of information that is required to improve care delivery. The potential benefits of health IT are enormous. Appropriately implemented and utilized, health IT can enable better access to health care services and information, resulting in better outcomes and cost savings.

Health IT is considered to be one of the most expensive capital and human resource investments for providers. The adoption process is complex for most Centers and requires buy-in from physicians as many are not employed by the organization and whose thinking about value of technology varies widely. The Maryland Ambulatory Surgical Association is well positioned to advocate for health IT adoption by educating Centers on the issues that resolve barriers to implementation; identifying Centers that can serve as champions of technology adoption; and providing assistance in developing strategies for Center adoption.

Appendix A: Glossary of Terms

Barcode Medication Administration (BCMA):

Technology that allows for the real-time confirmation of the "five rights" - right patient, right medication, right dose, right route, and right time - for medication administration.

Clinical Decision Support:

Computer application to assist in clinical decisions by providing evidence-based knowledge in the context of patient-specific data.

Computerized Physician Order Entry (CPOE):

Computer-based application system for ordering providers (MD, DO, NP, or PA) to enter patient care orders at the point of care.

Diagnostic Centers:

Places that offer diagnostic services such as imaging services and other medical tests to aid in diagnosing and treating a patient.

Electronic Health Record (EHR):

A longitudinal collection of electronic health information that serves as a legal medical record, which includes documentation, vital signs, and assessments.

Electronic Medication Administration Record (eMAR):

An electronic format of the traditional paper-based medication administration record.

Electronic Prescribing (e-prescribing):

Electronic transmission of prescriptions directly to the dispensing pharmacy by the ordering provider.

Health Information Exchange (HIE):

Electronic movement of health-related information among organizations.

Health Information Technology (health IT):

Technology used to maintain health information into electronic format.

Infection Surveillance Software (ISS):

An application that monitors the events of infectious disease.

Laboratories:

Places where clinical tests are performed on specimens in order to get information about the health of a patient and aid in the diagnosis, treatment, and prevention of disease.

Order Set:

A group of evidenced-based orders for specific diagnosis or problems

Appendix B: Geographic Distribution by County

Baltimore Metropolitan

Anne Arundel County
Baltimore City
Baltimore County
Carroll County
Harford County
Howard County

Eastern Shore

Caroline County
Cecil County
Dorchester County
Kent County
Queen Anne's County
Somerset County
Talbot County
Wicomico County
Worcester County

National Capital

Montgomery County
Prince George's County

Southern Maryland

Calvert County
Charles County
St. Mary's County

Western Maryland

Allegany County
Frederick County
Garrett County
Washington County

Appendix C: Survey Questions

Below is a summary of the *2011 Freestanding Ambulatory Surgical Health Information Technology Survey*. FASCs were asked to answer a filter question to determine if the Center uses software applications to manage their patient workflow. The Planning Questions (refer to the end of the survey) were included in each section in the event that the FASC selected "no" to any question designated with: *"If no, go to Planning Questions."*

Overview

1. Does your Center use technology (e.g., electronic health records, computerized provider order entry, etc.) to manage your patient health information? *If no, answer Planning Questions.*
2. If yes, what is the name of the vendor?

Order Entry

1. Does your Center have an order entry system where providers (MD, DO, NP, PA) can electronically enter patient care orders? *If no, answer Planning Questions.*
2. Does this system allow providers to electronically view the status and results of electronically entered orders above?
3. Does this system have an order set* feature where a group of orders can be selected based upon the problem or diagnosis?
4. Does this system offer decision support* software for medication prescribing, including drug-drug; drug-food; and contraindication/dose limit for diagnosis, allergies, age/weight, lab/radiology results?
    a. Is this feature implemented and operationalized?
    b. Does this software offer links to resources for reference?
    c. Is electronic documentation required for overriding an interception?
5. Does this system offer decision support software for diagnosis, chronic conditions, and standards of care, including heart failure, diabetes, and other appropriate treatments such as pneumonia vaccination, flu shot, etc.?
    a. Is this feature implemented and operationalized?
    b. Does the software offer links to resources for reference?
    c. Is electronic documentation required for overriding an interception?
6. Does the system have an active "read-back order" function for verbal/phone orders?

Electronic Health Record (EHR)

7. Does your Center have an EHR*? *If no, answer Planning Questions.*
8. Is this system ONC-ATCB*-certified?
9. Does this system allow review of previous admission data? *If no, answer Planning Questions.*

Medication Administration

10. Does your Center have an electronic medication administration record (eMAR*)? *If no, answer Planning Questions.*
11. Does your Center have a barcode medication administration (BCMA*) system? *If no, answer Planning Questions.*
12. Does your Center have an electronic medication reconciliation system in place for admission and discharge? *If no, answer Planning Questions.*

Postoperative Infection Tracking

1. Does your Center use software to manage postoperative infection tracking? *If no, answer Planning Questions.*

Health Information Exchange

13. Does your Center electronically prescribe discharge medications to local pharmacies? *If no, answer Planning Questions.*
14. Does your Center have a bidirectional electronic interface with community laboratories? *If no, answer Planning Questions.*
15. Does your Center have a bidirectional electronic interface with diagnostic centers? *If no, answer Planning Questions.*
16. Does your Center have a system capable of electronic data exchange for consultation or transfer of care with outpatient providers?

Statewide Health Information Exchange

1. Is your Center connected to the statewide health information exchange (HIE)*? *If no, answer Planning Questions.*

Planning Questions

Planning questions were incorporated in all survey sections as appropriate.

1. If no, is your Center:
    a. Assessing software vendors within 12 months?
    b. Implementing software applications within 12 months?
    c. Undecided at this time?

Appendix D: Survey Results

2011 Freestanding Ambulatory Surgical Center Health IT Survey Results								
Health IT	**Aggregate**	**Geography**					**Specialty**	
	All FASCs	*National*	*Baltimore*	*Eastern Shore*	*Southern Maryland*	*Western Maryland*	*Multi*	*Single*
	N = 114	*N =36*	*N =52*	*N=7*	*N=6*	*N =13*	*N = 19*	*N = 95*
Computerized Provider Order Entry (CPOE)								
Yes	65	16	29	5	5	10	7	58
Planning Projections								
Assessing	10	4	4	0	1	1	3	7
Implementing	1	1	0	0	0	0	0	1
Undecided	38	15	19	2	0	2	9	29
Clinical Decision Support								
Medications								
Yes	54	12	26	4	5	7	6	48
No	11	4	3	1	0	3	1	10
Diagnosis								
Yes	19	8	3	0	4	4	2	17
No	46	8	26	5	1	6	5	41
Electronic Health Record (EHR)								
Yes	95	29	43	6	6	11	13	82
Planning Projections								
Assessing	6	2	3	0	0	1	1	5
Implementing	1	1	0	0	0	0	0	1
Undecided	12	4	6	1	0	1	5	7
Electronic Medication Administration Record (eMAR)								
Yes	42	8	23	1	4	6	4	38
Planning Projections								
Assessing	12	9	2	1	0	0	0	12
Implementing	1	0	0	1	0	0	1	0
Undecided	59	19	27	4	2	7	14	45
Barcode Medication Administration (BCMA)								
Yes	0	0	0	0	0	0	0	0
Planning Projections								
Assessing	9	8	0	0	0	1	2	7
Implementing	2	0	1	1	0	0	1	1
Undecided	103	28	48	6	6	12	16	87
Infection Surveillance Software								
Yes	43	14	22	2	0	5	11	32
Planning Projections								
Assessing	15	6	5	0	0	4	2	13
Implementing	1	0	0	1	0	0	0	1
Undecided	55	16	25	4	6	4	6	49
Electronic Prescribing (e-prescribing)								
Yes	61	12	37	3	4	5	5	56
Planning Projections								
Assessing	13	7	2	0	1	3	2	11
Implementing	10	4	2	2	1	1	2	8
Undecided	30	13	11	2	0	4	10	20
Electronic Data Exchange with Laboratories (HIE)								
Yes	47	14	37	3	4	5	7	40
Planning Projections								
Assessing	13	6	2	0	1	3	1	12
Implementing	6	1	2	0	1	1	0	6
Undecided	48	15	11	2	0	4	11	37
Electronic Data Exchange with Diagnostic Centers (HIE)								
Yes	38	5	23	1	4	5	2	36
Planning Projections								
Assessing	17	9	4	2	1	1	2	15
Implementing	1	0	0	1	0	0	0	1
Undecided	58	22	25	3	1	7	15	43
Electronic Data Exchange with Providers (HIE)								
Yes	23	8	9	0	0	6	4	19
Planning Projections								
Assessing	11	6	2	1	1	1	2	9
Implementing	0	0	0	0	0	0	0	0
Undecided	80	22	41	6	5	6	13	67

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