	20121106		
Certified Professional EMR Specialist (CPEMS) Requirements			

This document contains the detailed requirements for the certification of a CPEMS, or Certified Professional EMR Specialist. These requirements focus on general understanding of the EHR components, interfacing the EMR using the various healthcare standards, and how to prepare for the implementation. The certification assumes that candidates have at least several years of prior experience and/or knowledge in the healthcare clinical and IT domain. A requirement for taking this certification exam is that the candidate has a CIIP or PARCA certification (minimal CPAS). The CPEMS certification specifically does NOT address any generic IT knowledge, including networking components, basic clinical and/or knowledge about healthcare standards such as basic DICOM, HL7 and IHE as this knowledge should be acquired through experience and/or other preceding certifications.

Learning objectives: The candidate will be able to function as part of an implementation team to implement, support, and maintain a Electronic Health Record system in a healthcare environment. He or she will be able to participate in the planning and scope definition process because the candidate will have a thorough understanding and knowledge of the interfacing and taks needed to prepare the implementation by the various users. The candidate will be well versed in the technical aspects such as interface and document standards.

Item:		The candidate should be able to:	Keywords:
1	**EHR Introduction and Architecture**	(weight: 15%)	
1.1	**Goals, Justification and Characteristics**		
	1	EHR definition	Define the EHR. Justify the EHR implementation based on the IOM and other reports.	Longitudinal record, EHR system, electronic patient jacket
	2	Justification and benefits	Describe the EHR value proposition through proper implementation of medical alerts, drug interactions, etc. Demonstrate cost savings and clinical benefits. Explain how EHR's address the 5 R's	Quality and efficiency of healthcare delivery, 5 R's, EHR impact on savings
	3	Stages and adoption model	List the different stages of the EMR, and the adoption model as defined by HIMSS and the applicable information systems for each stage. Describe the interaction between the various healthcare IS. Identify the different enterprise levels for an electronic health record.	EHR stages, adoption model, enterprise level, RHIO, NHIN, HIS, RIS, Hospital IS systems, EMR, EHR, PHR
	4	HIS and departmental systems	Distinguish the HIS sub systems such as lab, pharmacy, radiology and cardiology. List and explain the typical functionality of department systems (RIS, CIS, LIS, etc).: scheduling, billing, management reporting, etc.	CIS, LIS, RIS, demographics, inventory control, scheduling, order tracking and management, clinical and management reporting
	5	EMR/PHR characteristics	Identify how the PHR, EMR and EHR differ with regard to application and domain.	EHR,EMR, PHR, levels, interoperability

1.2		**Encounters and Information Exchange**		
	1	Longitudinal record	Describe the input components including typical encounter information	encounter information, 5 input stats, SOAP note
	2	Data entry	Discuss a typical encounter, the corresponding sheets of a typical EHR and results	cover page, workflow sheets
	3	Information Exchange	Identify the components used to exchange information between clinics, hospitals, and regional repositories and directories.	repository, directory, registry, RHIO, HIE, NHIN, NwHIN
	4	Patient identification and document sharing	Explain the need for a unique patient identifier or index. Demonstrate how documents are being exchanged	Patient ID, MPI, PIX, XDS, XDS-I
	5	Health Information Exchange	Define the RHIO and HIE and list its services. Distinguish between the different HIE models	RHIO, HIE, record location, identity management, consents and export of information; models: consolidated, federated, switched, patient supported, hybrid
	6	Certification and federal requirements	Describe the main EHR system components from a certification perspective. Break down the components according to CCHITT. Distinguish between the different Meaningful Use stages for using a EHR as defined throught the HiTech act as a result of the ARRA.	EHR system components, the EHR core, input, EDMS, peripherals, clinical messaging, external interfaces, portals and billing, CCHITT, Meaningful Use, Hitech act, ARRA
1.3		**EHR components**		
	1	Core	Describe the EHR core consisting of the specialties and departments, Identify the main components of the Clinical Data Management System and how they use the EHR core	Core, specialties, departments, CDMS, knowledge based systems, clinical support
	2	Medication management	Distinguish various medication mgt implementations. List actors and transactions for contrast supplies	Pharmacy, MAR, substance administration
	3	Storage components	Describe the difference and function of storage components	Archive, repository, data warehouse, CDS
	4	Storage architecture	Explain storage architectures	DICOM archive, cluster, mirror, SAN, NAS, cloud archiving, ASP, SSP
	5	Enterprise and vendor neutral archiving	List and describe the types of Vendor neutral archiving	VNA, enterprise, levels
	6	Document and electronic input	List in- and output sources and define corresponding policies	Data formats, data integrity, import and export policies and procedures
	7	Image input profiles	Define applicable IHE profiles	PDI, IRC, IRWF
1.4		**EHR sub systems**		

		1	EDMS	List the Electronic document management functions: Identify mechanism such as scanners, CD's, direct connect	EDMS, document management, order, sort, prepare, separate, index, mark , direct connect, cloud connect
		2	Smart peripherals	Describe the interfacing of smart peripherals, including home based systems	smart peripherals, home peripherals
		3	Input sources	List the input sources with their functionality and their EHR interaction	OC/RR, CPOE, EMAR, POC charts and e-prescribing
		4	Messaging, results and external interfaces	Describe the function of results, critical results and discrepancy reports	Reports, reporting stages, CCR, discrepancy reports
		5	Dose reporting	Identify the several methods to record X-ray dose, and actors involved with recording, registration and management reporting. Select the best method depending on the applicable constraints	Image header, MPPS, Dose SR, screen scraping, OCR, repository
		6	EHR Portals	Comprehend basic lay-out of cover sheets	Cover sheet tabs
		7	Patient financial services	Describe the function of patient financial services	Diagnosis codes, HIPAA transactions and codes, HIPAA security and privacy role, X.12, EDI, claims
1.5	PHR				
		1	Definition and attributes	Define the PHR and list its characteristics, types and attributes	Stand-alone, tethered, PHR sponsors
		2	PHR dimensions	Identify the four different dimensions	Content, stakeholders, integration, cost
		3	Contents	Identify the components covering personal and health information	Demographics, providers, insurance, consents, clinical history, results, correspondence
		4	Stakeholders	Identify the major stakeholders of the PHR	Consumers, employers, insurance companies, public health and providers
		5	Integration and cost	List the different integration options. Identify the different costing and funding options	Stand-alone, commercial, free or sponsored funding
		6	Implementation issues	Recognize and be prepared for the major implementation issues with regard to PHR adoption	PHR information correctness liability, digital divide
2	Standards			(weight: 15%)	
2.1	Health care IT standards				
		1	Levels of Standardization for communication	Identify the different levels of standardization ranging from physical to data formats	Physical, data link, transport, protocols, data formats
		2	Levels of Application level Standardization	Identify the different levels of standardization ranging from vocabularies to workflow	vocabularies, presentation, profiles, data models and workflow

		3	Relationship between DICOM, HL7 and IHE	Relate the various standards to a workflow example from an order to result	DICOM, HL7, client-server, trigger events, conformance, tagged protocol, IHE, optionality
		4	HL7 V2 message structure	Analyze a registration and report message into segments being able to interpret the different trigger events	trigger events, segments, delimiters
		5	HL7 V2 messaging samples	Analyze a registration and report message	ADT, ORM, ORU, PID, PV1, ORC, OBR. OBX, AL1
2.2	Imaging standards				
		1	DICOM Protocol	Distinguish between the DICOM protocol and data formats, analyze the protocol steps	AE Title, Port number, IP address, header, negotiation
		2	DICOM Class concept	Interpret SOP Classes and Instances, recognize roles (SCU, SCP)	Application Entities, SOP Class, SOP Instance, SCU, SCP
		3	DICOM encoding	Interpret a DICOM dump and VR encoding of Attributes and determine how codes from vocabularies are used in the context of images	IOD, tagged protocol, Value Representation, Tag, vocabularies, SNOMED
		4	DICOM services	Specify which DICOM services are used for which workflow	Verification, Modality Worklist, Store, MPPS, STC, Query/Retrieve
		5	Image display consistency	Formulate the importance of image quality, consistency and persistency	Greyscale standard display function, presentation state, monitor calibration
2.3	Messaging - HL7 V3				
		1	Difference between V2 and V3	List the differences between the protocols and impact on efficiency	verbose, compact
		2	Transactions	Interpret a V3 message and how it is related to the information model	RIM, CMET
		3	Encoding	Locate the parts in an XML encoding and using the V3 reference model as a basis for modeling the data in an institution	RIM, XML
		4	CDA	Identify the components of the CDA	CDA, CCD, CCR, version, templates
		5	Exchange documents	Identify the common documents and corresponding templates	lab report, immunization records, triage note, medical summaries, discharge summaries, ED report, ante partum, referral summary, and XPHR
2.4	IHE				
		1	Profiles and domains	Identify the profile components, i.e. actors, transactions, use cases and UML sequence diagrams	Actors, transactions, UML, use cases
		2	Laboratory	Identify the lab profiles important for EHR	LTW, XD-LAB, LDA, LBL, LPOCT and LCSD
		3	Patient Care Coordination	Identify the PCC profiles important for the EHR	MS, XPHR, EDR
		4	Patient Care Devices	Identify the device profiles important for the EHR	DEC, PIV, IDCO and RTM

	7	ITI	Identify the ITI profiles important for EHR	ATNA, BPPC, CT, XCA, XDM, XDR, XDS, XDS-SD, XUA, EUA, MPQ, PAM, PDQ, PIX, PSA, PWP, RFD, RID
2.5	**EHR/PHR Functional standards**			
	1	EHR Direct Care	List the Direct Care functions as defined by HL7	Care Management, CDS, Operations management
	2	EHR Supportive Care	List the Supportive Care functions as defined by HL7	Clinical support, measurement, analysis, research and reports
	3	EHR Information Infrastructure	List the ITI functions as defined by HL7	Security, Record information and management, registries and directories, terms, interoperability, business rules and workflow management
	4	PHR personal health	List the PHR personal health sections as defined by HL7	Account holder profile, manage historical and current data, wellness, education, DSS and encounters
	5	PHR Supportive Care	List the Supportive Care functions as defined by HL7	Provider, financial and administrative management
	6	PHR Information Infrastructure	List the ITI functions as defined by HL7	Health record information and management, interoperability, security and auditable records
3	**EHR/PHR preparation**		(weight: 15%)	
3.1	**Data entry**			
	1	EHR data types	Define impact of the use of unstructured vs. structured text	Structured text, narrative, pick lists, macros, variable and fixed information
	2	Templates	Design templates, critical to data accuracy and completeness	templates, structured reporting, DICOM SR
	3	Coding introduction	Understand code systems	language, vocabulary, terminology, nomenclature, classifications
	4	Coding implications	Determine impact of proper use of coding from applicable vocabularies on the EHR	Data integrity
	5	Vocabularies	List the various vocabularies and their specific application and domains	OASIS, HEDIS, UHDDS
	6	Coding schemes	Distinguish major coding schemes	SNOMED, CPT, LOINC, ICD
	7	Nursing codes	Apply codes used for POC	Insurance, diagnosis, procedural coding
	8	Data models	Apply the applicable data models to the information input and process	UMLS model

3.2		**Validation and certification**		
	1	Validation	Define the appropriate validation methods	paper validation, simulation, test system, protocol and data validation, validation tools
	2	Test scenarios	Generate test data and test scenarios	use cases, scenarios, scheduled, unscheduled, reconciliations, exceptions, cancelations
	3	Build	Plan the build, configuration, testing and scenario development	build, codes, procedures and descriptions
	4	Certification areas and agencies	Distinguish between different certifications and their emphasis	MQSA, Joint commission, EHR and Meaningful Use certification, FDA certification
	5	Functional breakdown	List the functions which are needed for formal certification	CCITT functional breakdown
	6	Modular breakdown	Distinguish when it is appropriate to self certify	Off the shelf vs. in-house
3.3		**Implementation process**		
	1	Lifecycle	Identify the different lifecycle phases of a EHR implementation	Feasibility, analysis, planning, purchasing, implementation, maintenance and disposal/migration
	2	Workflow	Define workflow processes	Methodologies
	3	Usability	Define Usability requirements	ease of use, efficiency, error free, easy to navigate
	4	Challenges	Identify the challenges, both real and perceived	Time, cost, fear, vendor issues
	5	Barriers	Anticipate implementation barriers	Involvement, compensation (MU), existing migration path, expectations, funding, security, fragmentation of the system
	6	PHR issues	Define the issues special to PHR implementations	Physician resistance, digital consumer divide, consents, accuracy when managed by patient, cost models
3.4		**Regulatory factors**		
	1	Signatures	Distinguish between the different signatures and how they are used	Wet, digitized, electronic, digital
	2	Legality of signatures	Determine when to use wet and electronic signatures and implications of their use	Legality
	3	Privacy and security	List the privacy and security issues with the EHR	Analysis, access, authorization, encryption
	4	Consent	Identify patient consent and retention issues	Types of consents, retention rules

	5	Data considerations	Define data usage	Admissibility, evidence, discoverability
	6	Access	Define rules and controls and how to facilitate universal access	Audit trails; "digital divide"
	7	Accuracy	Define the quality attributes aka "data quality management model"	AHIMA attributes
	8	Risk analysis	Distinguish risk analysis features	Agents, targets, events
3.5	**System monitoring and reporting**			
	1	KPI	Identify and monitor Key performance indicators	Performance, uptime, utilization, capacity
	2	Dash boards	Distinguish between the two types of dashboards and how they are used	Operational, technical, reporting, analysis
	3	System monitoring	Monitor the network, applications and image quality	Network sniffer, queue's, heartbeat, performance, throughput, calibration
	4	FMEA	Perform a failure mode analysis	FMEA process steps and indices
	5	Spares, back-up	Define a back up and spare availability plan	Hot, cold, incremental, down time procedures