Section Interop.2 – EHR Interoperability Model – Conformance Criteria

- Applicable to EHR and other application systems
- Applicable to System Roles: Record Source, Transmitter, Intermediary and Receiver
- Applicable to EHR Record Exchange Standards

Conformance clauses are in terms of “shall”, “should” and “may”.

Table Interop.2.A (following) describes, column by column:

A) ID

B) EHR Interoperability Assertion or Characteristic

C) Source EHRS or other Application

D) Transmitting EHRS or other Application

E) EHR Exchange Standard (e.g., HL7)

F) Intermediary Application (e.g., interface engine)

G) Receiving EHRS or other Application

ID	EHR Interoperability Assertion/Characteristic	Source EHRS or App	Sending EHRS or App	EHR Exchange Standard	Intermediary Application	Receiving EHRS or App
Section 1 - Health(care) Delivery						
1.1	Health(care) delivery occurs at points along a time continuum.					
1.2	The Health Record documents health(care) along the time continuum.					
Section 2 - Health(care) Act						
2	An Act is a discrete action, service or event occurring in the course of health(care) delivery.					
2.1	An Act is an accountable unit of health(care) delivery.					
2.2	Health(care) delivery is comprised of Acts.					
2.3	An Act has associated facts, findings and observations.					
2.4	An Act is (one of):					
2.4.1	Patient related.					
2.4.2	Not patient related.					
2.5	An Act has Actor(s), in Roles, in Participations.					
2.6	An Act has one or more accountable Actor(s).					
2.7	An Act occurs at a specific date/time and has an elapsed time.					
2.8	An Act occurs at a specific physical location.					
2.9	An Act may be an aggregation of other Acts.					

ID	EHR Interoperability Assertion/Characteristic	Source EHRS or App	Sending EHRS or App	EHR Exchange Standard	Intermediary Application	Receiving EHRS or App
Section 3 - Act Record						
3	An Act is documented by an Act Record instance.	Shall enable Act Record to document/record each Act.	Shall present Act Record.	Shall enable Act Record to be represented as a persistent, legal whole, including all identifiers, attributes, time stamps, audit trails, access controls, multi-media and document elements...	Shall forward Act Record as a persistent, legal whole, including all identifiers, attributes, audit trails, access controls, multi-media and document elements...	Shall capture/retain Act Record.
3.1	An Act/Act Record instance is uniquely identifiable.	Shall uniquely identify Act and Act Record instance.	Shall present Act and Act Record ID.			Shall capture/ retain Act and Act Record ID.
3.2	An Act Record is persistent legal evidence of Act occurrence.	Shall retain/ persist Act Record for legally required time period.	Shall present Act Record as a legal whole.			Shall capture/ retain Act Record as a legal whole.
3.3	An Act Record is a unit of record of the Health Record.	Shall retain Act Record as unit of Health Record.	Shall present Act Record as unit of Health Record.			Shall capture/ retain Act Record as a single unit of record.
3.4	An Act Record is comprised of multiple attributes (elements).	Shall capture/ retain each Act Record attribute.	Shall present each Act Record attribute.			Shall capture/ retain each Act Record attribute.
3.5	An Act Record may contain attributes:					
3.5.1	Current to the Act	Shall capture/ retain each attribute current to the Act.	Shall present each attribute current to the Act.			Shall capture/ retain each attribute current to the Act.

ID	EHR Interoperability Assertion/Characteristic	Source EHRS or App	Sending EHRS or App	EHR Exchange Standard	Intermediary Application	Receiving EHRS or App
3.5.2	Of an historical nature	Shall capture/ retain each attribute of an historical nature, with date/time reference as appropriate.	Shall present each attribute of an historical nature, with date/time reference as appropriate.			Shall capture/ retain each attribute of an historical nature, with date/time reference as appropriate.
3.6	An Act Record is (one of):					
3.6.1	Patient specific and patient identifiable.	Shall identify Act Record to Patient.	Shall identify Act Record to Patient.			Shall identify Act Record to Patient.
3.6.2	Not patient specific.	Shall identify Act Record as non patient related and create Alternate ID.	Shall identify Act Record as non-patient related with Alternate ID.			Shall identify Act Record as non-patient related with Alternate ID.
3.6.3	Patient related but aliased.	Shall identify Act Record with Alias.	Shall identify Act Record with Alias.			Shall identify Act Record with Alias.
3.6.4	Patient related but anonymized.	Shall identify Act Record as anonymized.	Shall identify Act Record as anonymized.			Shall identify Act Record as anonymized.
3.7	An Act Record is (one of):					
3.7.1	A non-attestable unit of the health record					
3.7.2	An attestable (signature specific) unit of the health record, which is (one of):	Shall capture/ retain Act Record signature or other attestation.	Shall present Act Record signature or other attestation.			Shall capture/ retain Act Record signature or other attestation.
3.7.2.1	Attested by one or more Actor(s)/ Author(s)	Shall identify Act Record signers/attesters.	Shall identify Act Record signers/attesters.			Shall identify Act Record signers/attesters.
3.7.2.2	Not yet attested					
3.8	An Act Record has (may have):					
3.8.1	One or more originating Actor(s)/Author(s)					
3.8.2	One or more amending Actor(s)/Author(s)					

ID	EHR Interoperability Assertion/Characteristic	Source EHRS or App	Sending EHRS or App	EHR Exchange Standard	Intermediary Application	Receiving EHRS or App
3.9	An Act Record is sourced by an originating application.	Shall identify Originating Application.	Shall identify Originating Application.			Shall identify Originating Application.
3.10	An Act Record allows revision by additive amendment only.	Shall maintain original content along with content from each successive amendment.	Shall present original content along with content from each successive amendment.			Shall maintain original content along with content from each successive amendment.
3.10.1	Each Act Record amendment may include a reason for amendment					
3.11	An Act Record is time stamped according to:					
3.11.1	Act Date/Time	1) Shall capture/retain Act Date/Time 2) Shall ensure date/time traceable to and synchronized with Master Clock	Shall present Act Date/Time.			Shall capture/retain Act Date/Time.
3.11.2	Act Duration	Shall capture/retain Act Duration	Shall present Act Duration.			Shall capture/retain Act Duration.
3.11.3	Act Record Origination Date/Time	1) Shall capture/ retain Act Record Creation Date/Time 2) Shall ensure date/time traceable to and synchronized with Master Clock	Shall present Act Record Creation Date/Time.			Shall capture/ retain Act Record Creation Date/Time.

ID	EHR Interoperability Assertion/Characteristic	Source EHRS or App	Sending EHRS or App	EHR Exchange Standard	Intermediary Application	Receiving EHRS or App
3.11.4	Act Record Amendment Date(s)/Time(s)	1) Shall capture/ retain Act Record Amendment Date(s)/Time(s). 2) Shall ensure date/time traceable to and synchronized with Master Clock	Shall present Act Record Amendment Date(s)/Time(s).			Shall capture/ retain Act Record Amendment Date/Time.
3.12	An Act Record is oriented to physical locations:	Shall identify Physical Location of Act Record creation/ amendment	Shall identify Physical Location of Act Record creation/ amendment			Shall capture/ retain Physical Location of Act Record creation/ amendment.
3.12.1	Act Location	Should identify Physical Act Location	Should identify Physical Act Location			Should identify Physical Act Location.
3.12.2	Act Record Origination Location	Should identify Physical Location Of Act Record Creation	Should identify Physical Location Of Act Record Creation			Should identify Physical Location Of Act Record Creation.
3.12.3	Act Record Amendment Location(s)					
3.13	An Act Record is originated/amended at a specific device and network location.	Shall identify Device(s), Network Location(s) for Act Record creation/ amendment.	Shall identify Device(s), Network Location(s) for Act Record creation/ amendment.			Shall identify Device(s), Network Location(s) for Act Record creation/ amendment.
3.14	An Act Record may contain uniquely identified multi-media elements.	Should capture/ retain multi-media as Act Record element.	Should present multi-media as Act Record element.			Should capture/ retain multi-media as Act Record element.
3.15	An Act Record may contain uniquely identified document elements.	Should capture/ retain documents as Act Record elements.	Should present documents as Act Record elements.			Should capture/ retain documents as Act Record elements.

ID	EHR Interoperability Assertion/Characteristic	Source EHRS or App	Sending EHRS or App	EHR Exchange Standard	Intermediary Application	Receiving EHRS or App
3.16	An Act Record may be signed or attested as complete, by declaration or by algorithmic measure.	1) Shall capture/ retain Act Record completeness signature or attestation. 2) Shall measure (algorithmically) Act Record for completeness.	1) Shall present Act Record Completeness Status. 2) Shall present Act Record completeness signature or attestation.			1) Shall capture/ retain Act Record Completeness Status. 2) Shall capture/ retain Act Record Completeness signature or attestation.
3.17	An Act Record may be designated as accurate, by declaration or by algorithmic measure.	1) Shall capture/ retain Act Record accuracy signature or attestation. 2) Shall measure (algorithmically) Act Record for accuracy.	1) Shall present Act Record Accuracy Status. 2) Shall present Act Record accuracy signature or attestation.			1) Shall capture/ retain Act Record Accuracy Status. 2) Shall capture/retain Act Record accuracy signature or attestation.
3.18	An Act Record may embed access controls to allow only permitted:					
3.18.1	Record access/view	May permit Act Record access/ view based on Access Control parameters.	May present Access Control parameters for Act Record access/view.			May capture/ retain Access Control parameters for Act Record access/view.
3.18.2	Record creation/amendment	Shall permit Act Record creation/ amendment based on Access Control parameters.	Shall present Access Control parameters for Act Record creation/ amendment.			Shall capture/ retain Access Control parameters for Act Record creation/ amendment.
3.19	An Act Record has an embedded audit trail, tracing:					

ID	EHR Interoperability Assertion/Characteristic	Source EHRS or App	Sending EHRS or App	EHR Exchange Standard	Intermediary Application	Receiving EHRS or App
3.19.1	Original record content along with each successive amendment, time stamped	Shall capture/ retain original Act Record content, along with content for each successive amendment.	Shall present original Act Record content, along with content for each successive amendment.			Shall capture/ retain original Act Record content, along with content for each successive amendment.
3.19.2	Point of record origination and initial retention	Shall log Act Record origination.	Shall present Act Record origination.			Shall capture/ retain Act Record origination log.
3.19.3	Point of record amendment	Shall log Act Record amendment (see 3.19.1).	Shall present Act Record amendment (see 3.19.1).			Shall capture/ retain Act Record amendment (see 3.19.1).
3.19.4	Point of record content translation	Shall log Act Record content translation.	Shall present Original Content and Translated Content.			Shall capture/ retain Original Content and Translated Content.
3.19.5	Point of record verification	Shall log Act Record verification.	Shall present Act Record verification.			Shall capture/ retain Act Record verification.
3.19.6	Point record attested complete	Shall log Act Record completion.	Shall present Act Record completion log.			Shall capture/ retain Act Record completion log.
3.19.7	Point record attested accurate	Shall log Act Record attested accurate.	Shall present Act Record attested accurate log.			Shall capture/ retain Act Record accuracy log.
3.19.8	Point of record content access/view	Shall log Act Record access/view.	Shall present Act Record access/view log.			Shall capture/ retain Act Record access/view log.
3.19.9	Point of record transmittal or disclosure (to external entity)	Shall log Act Record transmittal or disclosure (to external entity).	Shall present Act Record transmittal/disclos ure log.			Shall capture/ retain Act Record transmittal/ disclosure log.
3.19.10	Point of record receipt (from external source)	Shall log Act Record receipt (from external source).	Shall present Act Record receipt log.			Shall capture/ retain Act Record receipt log.

ID	EHR Interoperability Assertion/Characteristic	Source EHRS or App	Sending EHRS or App	EHR Exchange Standard	Intermediary Application	Receiving EHRS or App
3.19.11	Point of record de-identification, aliasing	Shall log Act Record de-identification, aliasing.	Shall present Act Record de-identification, aliasing log.			Shall capture/ retain Act Record de-identification, aliasing log.
3.19.12	Point of record re-identification	Shall log Act Record re-identification.	Shall present Act Record re-identification.			Shall capture/ retain Act Record re-identification.
3.19.13	Point of record archival	Shall log record archival.				
3.19.14	Point of record destruction or identified missing	Shall log record destruction or missing status.				
3.19.15	Point of record deprecation	Shall log Act Record deprecation.	Shall present Act Record deprecation.			Shall capture/ retain Act Record deprecation.
3.20	An Act Record may be:					
3.20.1	Part of a patient encounter	Should identify Patient Encounter.	Should identify Patient Encounter.			Should identify Patient Encounter.
3.20.2	Related to an identified patient problem	Should identify related patient problem.	Should identify related patient problem.			Should identify related patient problem.
3.20.3	Related to a specific order or care plan	Should identify related order or care plan.	Should identify related order or care plan.			Should identify related order or care plan.
Section 4 - Act Record Attributes						
4	[Per 2.3 & 3.4] An Act Record is comprised of multiple attributes (elements).					

ID	EHR Interoperability Assertion/Characteristic	Source EHRS or App	Sending EHRS or App	EHR Exchange Standard	Intermediary Application	Receiving EHRS or App
4.1	An Attribute is uniquely identifiable.	Should enable Act Record with multiple diverse attributes.	Should present Act Record with multiple diverse attributes.	Should enable Act Record Attributes to be represented in whole, as per data type, computable or not, with unit of measure, reference ranges, coding/classification schemes...	Should forward Act Record Attributes in whole, as per data type, computable or not, with unit of measure, reference ranges, coding/classification schemes...	Should enable Act Record with multiple diverse attributes.
4.2	An Attribute has a data type.	Should identify each Attribute.	Should identify each Attribute.			Should identify each Attribute.
4.3	An Attribute is (one of):	Should enable diverse Attribute data types.	Should present each Attribute in proper data type.			Should enable diverse Attribute data types.
4.3.1	Computable	Shall enable computable Attributes.	Should present each Attribute in computable form.			Should enable computable Attributes.
4.3.2	Non-computable					
4.4	An Attribute may have (one or more):					
4.4.1	Unit of measure	Should enable Attribute unit of measure	Should present each Attribute unit of measure.			Should enable Attribute unit of measure.
4.4.2	Reference range	Should enable Attribute reference range(s).	Should present reference range(s) for each Attribute.			Should enable Attribute reference range(s).
4.4.3	Expiration date/time or duration	Should enable Attribute expiration date/time or duration.	Should present Attribute expiration date/time or duration.			Should enable Attribute expiration date/time or duration.
4.5	An Attribute may be encoded according to:					

ID	EHR Interoperability Assertion/Characteristic	Source EHRS or App	Sending EHRS or App	EHR Exchange Standard	Intermediary Application	Receiving EHRS or App
4.5.1	Industry standard coding/classification scheme	Should enable Attribute as Coded Element referencing industry standard Coding/Classification scheme and version.	Should present Attribute as Coded Element, referencing industry standard Coding/Classification Scheme and version.			Should enable Attribute as Coded Element, referencing industry standard Coding/Classification Scheme and version.
4.5.2	Local coding/classification scheme	Should enable Attribute as Coded Element referencing local code set.	Should present Attribute as Coded Element referencing local code set.			Should enable Attribute as Coded Element referencing local code set.
4.6	An Attribute may be translated from one code set to another with:			Shall enable coded elements to be mapped to/ from "interchange standard" code sets, while preserving original Coded Element, Code Set and Version.	Should forward coded elements mapped to/from "interchange standard" code sets or source/ recipient code sets, while preserving original Coded Element, Code Set and Version.	
4.6.1	Industry standard mapping scheme		Shall present Attribute as original Coded Element, with Code Set and Version.			Shall capture/ retain Attribute as original Coded Element, with Code Set and Version
4.6.2	Local mapping scheme		Shall present Attribute as original Coded Element, with Code Set and Version.			Shall capture/ retain Attribute as original Coded Element, with Code Set and Version
4.7	An Attribute may embed access control parameters to allow only permitted:			Should enable Access Control parameters to be represented.	Should forward Access Control parameters.	
4.7.1	Attribute access/view	Should permit Attribute access/view based on Access Control parameters.	Should present Access Control parameters for Attribute access/view.			Should capture/ retain Access Control parameters for Attribute access/view

ID	EHR Interoperability Assertion/Characteristic	Source EHRS or App	Sending EHRS or App	EHR Exchange Standard	Intermediary Application	Receiving EHRS or App
4.7.2	Attribute edit	Should permit Attribute edit based on Access Control parameters.	Should present Access Control parameters for Attribute edit.			Should capture/retain Access Control parameters for Attribute edit.
Section 5 - Health Record						
5	A Health Record is comprised of Act Record instances.	Shall enable Health Record comprised of 1-n Act Record instances.		Shall enable Health Record comprised of 1-n Act Record instances.	Shall enable Health Record comprised of 1-n Act Record instances.	Shall enable Health Record comprised of 1-n Act Record instances.
5.1	A Health Record may be:					
5.1.1	Patient specific & identifiable	Shall identify Patient.		Shall identify Patient	Shall identify Patient	Shall identify Patient
5.1.2	Not patient specific	Shall identity with Alternate ID.		Shall identity with Alternate ID.	Shall identity with Alternate ID.	Shall identity with Alternate ID.
5.2	A Health Record is bounded within a timeframe, specifically:					
5.2.1	At point in time	Should enable point in time health record(s).		Should enable point in time health record(s).	Should enable point in time health record(s).	Should enable point in time health record(s).
5.2.2	Over one or more patient encounter(s)	Should enable encounter-based patient health record.		Should enable encounter-based patient health record.	Should enable encounter-based patient health record.	Should enable encounter-based patient health record.
5.2.3	Over a patient's lifetime	Should enable patient lifetime health record(s).		Should enable patient lifetime health record(s).	Should enable patient lifetime health record(s).	Should enable patient lifetime health record(s).
5.2.4	Within an arbitrary period of time	Should enable time bounded health record(s).		Should enable time bounded health record(s).	Should enable time bounded health record(s).	Should enable time bounded health record(s).
5.3	A Health Record may be patient specific:					
5.3.1	Patient Personal Health Record	Should enable Personal Health Record.		Should enable Personal Health Record.	Should enable Personal Health Record.	Should enable Personal Health Record.

ID	EHR Interoperability Assertion/Characteristic	Source EHRS or App	Sending EHRS or App	EHR Exchange Standard	Intermediary Application	Receiving EHRS or App
5.3.2	Patient Encounter Record	Should enable Patient Encounter Record.		Should enable Patient Encounter Record.	Should enable Patient Encounter Record.	Should enable Patient Encounter Record.
5.4	A Health Record may be provider oriented:					
5.4.1	Practitioner Service Record	Should enable Practitioner Service Record.		Should enable Practitioner Service Record.	Should enable Practitioner Service Record.	Should enable Practitioner Service Record.
5.4.2	Provider Service Record	Should enable Provider Service Record.		Should enable Provider Service Record.	Should enable Provider Service Record.	Should enable Provider Service Record.
5.5	A Health Record may be population oriented:					
5.5.1	Population Health Record - Identifiable	Should enable Population Health Record with identifiable subjects.		Should enable Population Health Record with identifiable subjects	Should enable Population Health Record with identifiable subjects	Should enable Population Health Record with identifiable subjects
5.5.2	Population Health Record - Anonymized	Should enable Population Health Record with anonymized subjects.		Should enable Population Health Record with anonymized subjects.	Should enable Population Health Record with anonymized subjects.	Should enable Population Health Record with anonymized subjects.
Section 6 - Patient Encounter Record						
6	[Per 5] A Patient Encounter Record is comprised of Act Record instances.	Shall enable Patient Encounter Record comprised of 1-n Act Record instances.		Shall enable Patient Encounter Record comprised of 1-n Act Record instances.	Shall enable Patient Encounter Record comprised of 1-n Act Record instances.	Shall enable Patient Encounter Record comprised of 1-n Act Record instances.
6.1	A Patient Encounter Record is persistent legal evidence of the encounter.	Shall retain/ persist Patient Encounter Record for legally required time period.		Should enable Encounter Record with Persistence indicator	Should enable Encounter Record with Persistence indicator	Shall retain/ persist Patient Encounter Record for legally required time period.

ID	EHR Interoperability Assertion/Characteristic	Source EHRS or App	Sending EHRS or App	EHR Exchange Standard	Intermediary Application	Receiving EHRS or App
6.2	A Patient Encounter Record may be designated as complete, by declaration, by algorithmic measure or by declaration of agreement with algorithmic measure.	Shall capture/ retain Patient Encounter Record completeness attestation. Measures (algorithmically) Patient Encounter Record for completeness.		Should enable Encounter Record with Completeness Indicator and its source	Should enable Encounter Record with Completeness Indicator and its source	Shall capture/ retain Patient Encounter Record completeness attestation. Measures (algorithmically) Patient Encounter Record for completeness.
Section 7 - Patient Summary Record						
7	The Act of creating a summary record is in itself an Act and produces an Act Record	Shall create Summary of Care record	Shall present a Summary of Care record	Should enable Summary of Care record.	Should enable Summary of Care record.	Shall capture/ retain Summary of Care record.
7.1	A Summary Record is (one of):					
7.1.1	Persistent					
7.1.2	Non-Persistent					