

## Assessment of leverageable C-CDA templates for EMS Hospital Outcomes project

The Outcomes project will define document templates for the use hospitals and other clinical facilities to report patient outcomes to the EMS agencies who served and delivered the patient.

### C-CDA Header

The C-CDA header aligns well with the EMS Hospital Outcomes document.

Of the values required by C-CDA, only the Language is not recognized by NEMESIS: this value may be sent anyway, or it may be sent as a null value.

Nine values concur incidentally, required by C-CDA and recognized by NEMESIS. All are patient attributes.

Two values are required by NEMESIS and recognized by C-CDA (encompassing encounter time, high and low), and one value is required by NEMESIS to be added: the encompassing encounter discharge disposition code.

### Document templates

Of the twelve documents defined in CCD A R2, the primary candidate for harmonization is the Discharge Summary. Other types diverge significantly from the Hospital Outcomes case.

However, it is not clear that the Outcomes document is a proper specialization of the Discharge Summary. The addition of values and further specialization of values is not of great concern; that is the sort of activity specialization is designed to support, and we would expect such reuse to assist implementers in generating the new document type.

But the Outcomes document will not be expected to include a great deal of information that is specified in the Discharge Summary. We would not recommend that hospitals send agencies information that is not requested, in the interest of privacy, and we would therefore want to stipulate in the new guide that many of the Discharge Summary elements MAY be null. This fact is already implicit in the CDA design, but the IG paradigm implies that senders will normally populate required elements, and that null values will be exceptional. In the case of the Outcomes report, we would add a MAY constraint suggesting that 3 of 4 SHALL sections and 1 SHOULD section MAY be null.

Due to these divergent expectations, we believe that the Outcomes summary is a new document type, *not* a specialization of the Discharge Summary.

Section	C-CDA Discharge Summary requirement	Outcomes candidate
Allergies	Shall	May be Null
Course	Shall	May be Null
Discharge diagnosis	Shall	Shall
Plan of treatment	Shall	May be Null
Discharge medications	Should	May be Null
Procedures	NA	Shall
Chief complaint	May	Shall
Vital signs	May	Shall

Related documents	NA	Shall
20 other sections	May	NA

## Section Template Candidates

### Discharge Diagnosis

This section requires a code for hospital discharge, but hospital discharge is handled in the header Encompassing Encounter, and is not needed here. This code further prevents the use of this section for ED discharge.

The section also requires SCT; NEMESIS specifies ICD-10.

Decision: do not use

### Procedures

The procedure template aligns well with the NEMESIS requirements. The only difficulty will be containment: we have one value for hospital procedures and one for ED procedures. This will either be handled by using two separate documents or by using two main sections containing detail sections for the content (via Component5, in the xsd).

Decision: use without modification other than annotation on traceability.

### Chief Complaint

The procedure template aligns well with the NEMESIS requirement.

Decision: use without modification other than annotation on traceability.

### Vital Signs

The procedure template aligns fairly well with the NEMESIS requirement.

Open questions:

Is it acceptable to use the LOINC code entitled "Vital signs, weight, height, head circumference, oximetry, BMI, and BSA panel - HL7.CCDAr1.1" if all of those values are not to be included?

LOINC discourages the use of 2710-2 "Oxygen saturation in Capillary blood by Oximetry", recommending the use of 59408-5, "Oxygen saturation in Arterial blood by Pulse oximetry."

Decision: pending answers to questions, modify to require first ED SBP and annotate traceability.

### Related Documents

There is no C-CDA section defined for related documents.

**Proposed allocation of document requirements**

<b>NEMESIS element</b>	<b>CDA target</b>
eOutcome.01 - Emergency Department Disposition	New ED disposition section & observation
eOutcome.02 - Hospital Disposition	Encompassing encounter disposition
eOutcome.03 - External Report ID/Number Type	Related document act code
eOutcome.04 - External Report ID/Number	Related document reference id
eOutcome.05 - Other Report Registry Type	Related document act code
eOutcome.06 - Emergency Department Chief Complaint	C-CDA chief complaint section
eOutcome.07 - First ED Systolic Blood Pressure	C-CDA vitals section w/ 1 observation
eOutcome.08 - Emergency Department Recorded Cause of Injury	TBD - new section or addition to complaint (reason for visit?)
eOutcome.09 - Emergency Department Procedures	C-CDA procedures section, under ED section
eOutcome.10 - Emergency Department Diagnosis	New ED discharge diagnosis section
eOutcome.11 - Date/Time of Hospital Admission	Encompassing encounter time low
eOutcome.12 - Hospital Procedures	C-CDA procedures section, under hospital section
eOutcome.13 - Hospital Diagnosis	C-CDA discharge diagnosis, if we can harmonize terminology
eOutcome.14 - Total ICU Length of Stay	Hospital observation section
eOutcome.15 - Total Ventilator Days	Hospital observation section
eOutcome.16 - Date/Time of Hospital Discharge	Encompassing encounter time high
eOutcome.17 - Outcome at Hospital Discharge	Hospital observation section

Additional elements required or specified in C-CDA and recognized by NEMESIS

<b>NEMESIS element</b>	<b>CDA target</b>
ePatient.01 - EMS Patient ID	recordTarget.role.id
ePatient.05 - Patient's Home Address	recordTarget.role.addr
ePatient.18 - Patient's Phone Number	recordTarget.role.tel
ePatient.PatientNameGroup	recordTarget.role.patient.name
ePatient.13 - Gender	recordTarget.role.patient.administrativeGender
ePatient.17 - Date of Birth	recordTarget.role.patient.birthTime
ePatient.14 - Race	recordTarget.role.patient.race
ePatient.14 - Race	recordTarget.role.patient.sdrcRace
ePatient.14 - Race	recordTarget.role.patient.ethnicity
dAgency.02 EMS Agency Number eResponse.01 - EMS Agency Number	intendedRecipient.Organization.id

These proposals are represented in the constrained UML class diagram below.

class One Document Model

