Designation: E1744 – 04

An American National Standard

Standard Practice for View of Emergency Medical Care in the Electronic Health Record[1]

This standard is issued under the fixed designation E1744; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This practice covers the identification of the information that is necessary to document emergency medical care in an electronic, paperless patient record system that is designed to improve efficiency and cost-effectiveness.

1.2 This practice is a view of the data elements to document the types of emergency medical information that should be included in the electronic health record.

1.2.1 The patient's summary record and derived data sets will be described separately from this practice.

1.2.2 As a view of the electronic health record, the information presented will conform to the structure defined in other ASTM standards for the electronic health record.

1.3 This practice is intended to amplify Guides E1239 and F1629 and the formalisms described in Practices E1384 and E1715.

1.3.1 This practice details the use of data elements already established in these standards and other national guidelines for use during documentation of emergency care in the field or in a treatment facility and places them in the context of the object models for health care in Practice E1384 that will be the vehicle for communication standards for health care data.

1.3.1.1 The data elements and the attributes referred to in this practice are based on national guidelines whenever available.

1.3.1.2 The EMS definitions are based on those generated from the previous EMS consensus conference sponsored by NHTSA and from ASTM task group F 30.03.03 on EMS Management Information Systems.

1.3.1.3 The Emergency Department (ED) definitions are based on the Data Elements for Emergency Department Systems (DEEDS) distributed by the Centers for Disease Control in June 1997.

1.3.1.4 The hospital discharge definitions are based on recommendations from the Centers for Medicare and Medicaid Services (CMS) for Medicare and Medicaid payment and from the Department of Health and Human Services for the Uniform Hospital Discharge Data Set.

1.3.1.5 Because the current trend is to store data as text, the codes for the attribute values have been determined as unnecessary and thus are eliminated from this document.

1.3.1.6 The ASTM process allows for the data elements to be updated as the national consensus changes. When national or professional guides do not exist, or whenever there is a conflict in the existing EMS, ED, hospital or other guides, the committee will recommend a process for resolving the conflict or an explanation of the conflict within each guide.

1.3.2 This practice reinforces the concepts set forth in Guide E1239 and Practice E1384 that documentation of care in all settings shall be seamless and be conducted under a common set of precepts using a common logical record structure and common terminology.

1.4 The electronic health record focuses on the patient.

1.4.1 In particular, the computer–based patient record sets out to ensure that the data document includes:

1.4.1.1 The occurrence of the emergency,

1.4.1.2 The symptoms requiring emergency medical treatment, and potential complications resulting from preexisting conditions,

1.4.1.3 The medical/mental assessment/diagnoses established,

1.4.1.4 The treatment rendered, and

1.4.1.5 The outcome and disposition of the patient after emergency treatment.

1.4.2 The electronic health record consists of subsets of data for the emergency patient that have been captured by different care providers at the time of treatment at the scene and en route, in the emergency department, and in the hospital or other emergency health care settings.

1.4.3 The electronic record focuses on the documentation of information that is necessary to support patient care but does not define appropriate care.

[1] This practice is under the jurisdiction of ASTM Committee E31 on Healthcare Informatics and is the direct responsibility of Subcommittee E31.25 on Healthcare Management, Security, Confidentiality, and Privacy.

Current edition approved Nov. 1, 2004. Published November 2004. Originally approved in 1995. Last previous edition approved in 1998 as E1744 – 98. DOI: 10.1520/E1744-04.

2. Referenced Documents

2.1 *ASTM Standards:*[2]

E1239 Practice for Description of Reservation/Registration-Admission, Discharge, Transfer (R-ADT) Systems for Electronic Health Record (EHR) Systems

E1384 Practice for Content and Structure of the Electronic Health Record (EHR)

E1633 Specification for Coded Values Used in the Electronic Health Record

E1715 Practice for An Object-Oriented Model for Registration, Admitting, Discharge, and Transfer (RADT) Functions in Computer-Based Patient Record Systems

E1869 Guide for Confidentiality, Privacy, Access, and Data Security Principles for Health Information Including Electronic Health Records

E1985 Guide for User Authentication and Authorization

E2084 Specification for Authentication of Healthcare Information Using Digital Signatures[3]

F1177 Terminology Relating to Emergency Medical Services

F1288 Guide for Planning for and Response to a Multiple Casualty Incident

F1629 Guide for Establishing Operating Emergency Medical Services and Management Information Systems, or Both

2.2 *ANSI Standard:*

X3.172 American National Dictionary for Information Systems 1990[4]

2.3 *Institute of Electrical Electronic Engineers Standards:*

610.12 Standard Glossary of Software Engineering Terminology[5]

3. Terminology

3.1 For definitions of terms used in this specifcation, refer to ANSI X3.172 and IEEE 610.12

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *emergency condition*—change(s) in the patient's health status perceived to require immediate medical attention to prevent unnecessary death or disability (See also Guide F1177).

3.2.2 *emergency department (ED) data set*—that set of data elements collected in the emergency outpatient treatment facility prior to admission as an inpatient.

3.2.3 *emergency encounter*—a single event of health care for an emergency, such as care at the scene, or at the emergency outpatient setting. It concludes when the patient proceeds to the next phase of care for the emergency.

3.2.4 *emergency episode*—a series of encounters relating to an emergency condition that may lead either to death, full recovery, or a clinical steady state.

3.2.5 *emergency episode documentation*—those recorded observations that describe the care rendered during the period of an emergency episode, whether brief or extended.

3.2.6 *other emergency outpatient facility*—emergency facility that is not a licensed emergency department connected to an acute care hospital but which provides emergency stabilization and treatment upon demand. Such facilities may include clinic/health centers, freestanding ambulatory surgery center, physician's office, etc.

3.2.7 *pre-hospital EMS data set*—that set of data elements collected at onset and en route prior to arrival at the first treatment facility.

4. Significance and Use

4.1 The Emergency Medical Service System (EMSS) in the United States has largely arisen since 1945 and has drawn to a great degree from the experience gained in military conflicts during and since World War II. The documentation of care, however, has remained largely paper record–based until recently.

4.1.1 Beginning in the 1970s both civilian and military agencies have closely examined electronic means of storing and managing patient data about emergency medical care.

4.1.2 The report of the Institute of Medicine on the Computer-Based Patient Record has emphasized the use of information technology in patient care in general and emergency care data in particular.

4.1.3 During this period ASTM has documented the logical structure of the electronic health record in Guide E1239 and Practice E1384, while Guides F1288 and F1629 has defined the patient care data, to be gathered in the pre-hospital record, and the outcome data, relative to the pre-hospital phase of the emergency, which are collected in the emergency department and after inpatient admission.

4.1.3.1 Specifications for the logical model are also presented in Practice E1715.

4.2 This practice shows how the data gathered for EMS operations and management merge smoothly into the computer-based patient record, consistent with the recognition that these data are part of the primary record of care. Several states[6] have formalized that recognition in state law.

4.2.1 This practice does not instruct physicians how to collect data for patient care.

4.2.2 This practice does not indicate what information needs to be collected at the time of patient care.

4.3 The task now is to document, using standard conventions, the means by which this integration occurs in order to set the stage for the capture and transfer of such emergency care data using information technology and telecommunications in a standardized way consistent with all other settings of care while protecting the privacy and confidentiality of that data.

[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

[3] Withdrawn. The last approved version of this historical standard is referenced on www.astm.org.

[4] Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036.

[5] Available from Institute of Electrical and Electronics Engineers, Inc. (IEEE), 445 Hoes Ln., P.O. Box 1331, Piscataway, NJ 08854-1331.

[6] State of Washington: Revised Code of Washington 76.168 and Washington Administrative Code 246-976-380.

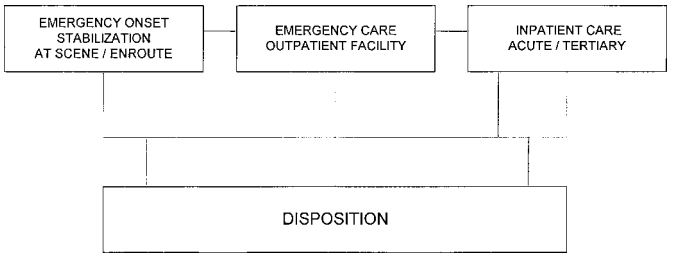

FIG. 1 Data Flow in Emergency Medical Care

4.3.1 The electronic health record has the potential to reduce health care costs by optimizing case management and supporting effective post ED follow-up.

4.3.2 Systematizing the data also enhances its ability to be used consistently, with proper protection, for research into and for management of EMSS operations within the various jurisdictional boundaries.

4.4 The electronic form of the emergency episode documentation utilizes the same logical data model as the electronic health record, but it focuses on data collected during the different phases of the emergency.

4.4.1 These data sets do not limit what may be recorded, or by whom, but they do identify those data considered essential, when they exist. These data sets include all those data recorded to document instances of emergency medical care.

4.4.2 Data organized to enhance flexible and efficient management of information.

4.4.2.1 Identifications of practitioners and facilities will be coded, when necessary, to protect confidentiality and to make provider data comparable. Names will be included when they are necessary to support patient care. Privacy and confidentiality of patient data should be handled according to Guide E1869.

4.4.2.2 Provider identification numbers will be maintained on master data files which also include additional information such as specialty, license level, and the like.

4.4.2.3 Provider identification numbers recorded in the electronic health record will automatically link to the master data files to eliminate the need for duplicate data entry of reference material in the patient record.

4.4.2.4 Coding systems for emergency reporting (ICD-9-CM, CPT,[7] HCPCS,[8] SNOMED[9]) will be referenced in the master data files for Practice E1384 as appropriate.

4.4.2.5 The efficient arrangement of the logical model of Practice E1384 permits output to be generated and identified to mirror the paper record, such as nurse-specific or physician-specific notes.

4.4.2.6 The arrangement of the logical model permits multiple entries of assessment data, using a small group of variables, that can then be used to generate output. For example, sequence of diagnoses by date-time.

[7] *Current Procedure Terminology for Physician Services.*

[8] HCFA (Health Care Financing Administration) Common Procedure Coding System.

[9] *Systematized Nomenclature of Medicine.*

5. Phases of Emergency Medical Care

5.1 Patient data are collected during the different phases of the emergency by different care providers, the number and type depend on the severity of the emergency.

5.1.1 Fig. 1 presents the different phases of emergency from onset until final disposition, at which point the patient is no longer the responsibility of emergency care.

5.1.2 In some instances, emergency patients are transported from the location of onset to an emergency department and then later transferred to specialty tertiary care centers to receive treatment for life-threatening medical problems.

5.1.3 Records completed for the emergency patient at different points in time are unique to the type of emergency response and the phase of the emergency.

5.1.4 This practice does not include rehabilitation and outpatient follow-up as part of emergency medical care since this information is recorded elsewhere in the RHR and is not within the scope of this practice.

5.2 Documentation of emergency care is more efficient if the data are captured at the time of collection so that this information can be incorporated simultaneously into the electronic health record at the time of data entry.

5.3 A core of patient identification information (age/date of birth, sex/gender, facility identification, times, etc.) is common to all of the medical records.

5.3.1 Other data elements exist that are unique to the emergency event, and still others exist that are unique to a specific care site.

5.3.2 Although many different records may be completed for a single emergency patient, not all of the data collected are incorporated into the electronic health record.

5.3.2.1 Except for times (see 6.14.4 and 6.14.14), administrative data which are useful for ambulance service management information, such as the use of lights and sirens and mileage, the EMS agency's response number, the type of EMS vehicle, and environmental factors affecting EMS care, have been excluded from the electronic health record, which focuses on the patient.

5.4 The electronic health record has the potential to improve data quality as follows.

5.4.1 Time and date entries will not be subject to the idiosyncrasies of the clock at hand, or the memory of the person entering the data but may be automatically recorded by the computer; however, when data are entered retrospectively, the system should allow a manual override to record actual time.

5.4.2 Direct data entry, by voice, dictation, touch, etc., by the care provider will eliminate the need to interpret the care provider's handwriting.

5.5 Each segment of emergency care is cumulative, though not necessarily sequential, to the prior documentation in the computer–based patient record. Data entered also may update previous documentation.

5.6 The EMS data set is and will continue to be a subset of Practice E1384 and Specification E1633; it will continue to be included in Guide F1629, EMS-MIS global lists of elements.

5.6.1 Each encounter contains contributions to the various record segments noted in Practice E1384.

5.7 Data elements for the emergency patient to be included in the electronic health record are grouped according to the three main phases of a medical emergency.

5.7.1 The first phase refers to the emergency stabilization and treatment provided immediately after onset and en route.

5.7.2 The second phase refers to the emergency diagnostic and treatment care provided at an emergency department/outpatient facility.

5.7.3 The third phase refers to inpatient care.

5.7.4 Potential data sources are listed for each level.

5.8 The data elements within each level are classified as follows according to the segments of the electronic health record presented in Practice E1384;

5.8.1 *Segment 1: Demographics*—Personal data elements sufficient to identify the patient, collected from the patient or patient representative and not related to health status or service provided (see Practice E1384, 6.3.1).

5.8.2 *Segment 2: Legal Agreements*—Data elements indicating legally binding directions or restraints on patient health care, release of information, and disposal of body or body parts, or both, after death.

5.8.3 *Segment 3: Financial Information*—Data elements necessary to document the process and parties involved and responsible for payment of patient health care services.

5.8.4 *Segment 4: Provider/Practitioners*—Data elements identifying the primary organization or establishment responsible for the availability of health care services for this specific episode or encounter and the individuals licensed or certified to deliver care to patients, who had contact with the patient, and provided care based on independent judgment.

5.8.5 *Segment 5: Problem List*—Data elements describing the patient's past medical history and other factors such as social problems, psychiatric problems, risk factors, allergies, reactions to drugs or foods, behavioral problems or other medical alerts.

5.8.6 *Segment 6: Immunizations*—Data elements describing names and dates of immunizations received. (See Table 4 on Patient Record Content Structure Categories, Segments, and Entity Relationships in Practice E1384.)

5.8.7 *Segment 7: Exposure to Hazardous Substances*—Data elements describing exposure to hazardous substances. (See Table 4 on Patient Record Content Structure Categories, Segments, and Entity Relationships in Practice E1384.)

5.8.8 *Segment 8: Family/Prenatal/Cumulative Health/Medical/Dental/Nursing History*—Data elements describing previous signs and symptoms experienced over time.

5.8.9 *Segment 9: Assessments/Exams*—Data elements describing observations of the practitioner during a structured and systematic examination of the patient.

5.8.10 *Segment 10: Care/Treatment Plans and Orders*—Data elements that describe the clinical orders that direct a patient's treatment.

5.8.11 *Segment 11: Diagnostic Tests*—Data elements that document the results from the diagnostic tests performed on the patient.

5.8.12 *Segment 12: Medications*—Data elements that document the patient's current medications and those prescribed during the emergency encounter.

5.8.13 *Segment 13: Scheduled Appointments/Events.*

5.8.14 *Segment 14: Encounters/Episodes.*

5.8.14.1 *Administrative/Diagnostic Summary*—Data elements which clarify the time/date, location, type, and circumstances of the encounter or episode.

5.8.14.2 *Chief Complaint / Present Illness / Injury*—Determination of patient acuity and indication of the chief complaint or reason why the patient came for care, as reported by the patient or others.

5.8.14.3 *Progress Notes/Clinical Course*—Observations of the practitioner(s) during structured and systematic examination of the patient during encounters/episodes. It contains objective observations and measurements that quantify attributes of each body system.

5.8.14.4 *Therapies*—Data elements that describe all preventive or non-medicine therapeutic, or both, services performed at the time of the episode or encounter or scheduled to be performed before the next episode or encounter.

5.8.14.5 *Procedures*—Data elements which describe all procedures performed for diagnostic, exploratory, or definitive treatment purposes including surgical, transfusions and physical, occupational, respiratory, rehabilitative, or mental health therapies provided as a result of the emergency.

5.8.14.6 *Disposition*— Data elements which describe the patient's destination and status at discharge, and a brief discharge summary.

5.8.14.7 *Charges*—Total charges for care received.

5.9 Authorship and authentication are explained as follows for documenting and managing the data included in the computer–based patient record.

5.9.1 Authorship identifies the practitioner who is the author responsible for the action/entry.

5.9.2 Authentication validates the author via a voluntary secondary process (signature, biometric identifier, computer key, etc.) and that the sources of data received are as claimed. (See Practice E1384, Guide E1985, and Specification E2084.)

5.9.3 The specifications for these types of processes are not part of the focus of this practice but will be included within the specifications for the EHR as a whole.

6. Emergency Onset and Stabilization Occurring at Scene and En route (Pre-hospital EMS)

NOTE 1—The data elements presented in this section document the initial emergency phase of emergency care. Some patients with life threatening or serious medical problems may be treated and transported by EMS to the next level of care in the emergency department. Similar patients may elect to bypass EMS (for example, some cardiac patients) and go directly to the emergency department. Thus the data elements included in this section focus on the information that is urgently needed when the emergency patient first requests help. Data elements which are necessary to document the EMS response are documented in parentheses as "EMS No." These EMS data elements were developed at a national consensus conference of EMS experts sponsored by NHTSA. Data elements applicable to patients who go directly to the emergency department are documented in parentheses as "DEEDS No." Data elements describing aspects of the patient's medical history important to the emergency encounter/episode are documented in parentheses as "EMDS." When inconsistencies exist between the EMS, EMDS and DEEDS formats for recording date/time, address and other data elements common to all data files, they should be resolved in favor of the DEEDS formats which are consistent with HL7 messaging standards.

6.1 *Segment 1: Demographics*—To be updated by prehospital EMS or emergency department personnel depending upon whether treatment begins at the scene or at the ED.

6.1.1 *Patient Name*— The current name of the patient receiving emergency medical care services for whom the record is being created and about whom data are being collected. (EMS-No. 32) Family name, given name, middle name/initial, suffix, prefix, degree and name type code. (EMDS; DEEDS 1.02; Appendix X1, 01001)

6.1.2 *Patient Address*— Patient address to be recorded as street address, other designation (for example, apartment number), city, state/province, zip/postal code, country, type of address (permanent, mailing), other geographic designation (for example, catchment area ID), county/parish, census tract. (EMDS; EMS No. 34–37; DEEDS 1.08)

6.1.2.1 *Address Type*— An indication of the type of address. (EMDS; Practice E1384; DEEDS 1.08):

Home/Mailing	Appendix X1, 01095
Business	Appendix X1, 01077
Temporary	Appendix X1, 01105
Foreign Residence	Appendix X1, 01099

6.1.3 *Telephone Number*— Telephone number at which the patient can be contacted. (EMDS; EMS No. 38; DEEDS 1.09; Appendix X1)

6.1.3.1 *Contact Type*— The type of telephone number recorded for a person. (EMDS, DEEDS 1.09; Appendix X1):

Home	Appendix X1, 01100
Business	Appendix X1, 01080
Temporary	Appendix X1, 01108
FAX	
Beeper	
Cellular	
Answering Service	
E-mail	

6.1.4 *Date/Time of Birth*—Patient's date of birth as reported by the patient or on written documentation. Time of birth reported for newborns. (EMDS; EMS No. 40; DEEDS 1.04; Appendix X1, 01032):

YYYYMMDD HHMM

6.1.5 *Sex/Gender*—The sex of the patient at the start of care. (EMDS; EMS No. 42; DEEDS 1.05; Appendix X1, 01040):

Male
Female
Unknown or undetermined

6.1.6 *Race*—Patient's race coded according to Directive 15 of the Office of Management and Budget and Specification E1633. (EMS No. 43, DEEDS 1.06; Appendix X1, 01042):

American Indian or Alaskan Native
Asian or Pacific islander
Black
White
Unknown

6.1.7 *Ethnicity*—Patient's ethnicity coded according to Directive 15 of the Office of Management and Budget and Specification E1633. This same coding is adopted by HL7 Master Tables, and National Center for Vital Health Statistics recommended Core Data Set. (EMS No. 43; DEEDS 1.07; Appendix X1, 01045):

Hispanic
Not of Hispanic Origin
Unknown

6.1.8 *Social Security Number*—Social security number for patient as assigned by the U.S. Social Security Administration, if available and released by the patient according to the Federal Privacy Act. (EMS No. 39; DEEDS 1.11; Appendix X1, 01020)

6.2 *Segment 2—Legal Agreements*:

6.2.1 *Presence of Living Will/Advanced Directive Name*—The name of an advance directive that is important to future treatment. (EMDS; Appendix X1, 02030)

6.2.2 *Treatment Authorization*—Coded values to indicate the type, if any, of EMS treatment authorization. (EMS No. 81)

Protocol (standing orders)
On-line (radio telephone)
On-scene
Written orders (patient specific)
Not applicable
Unknown

6.3 *Segment 3: Financial Information*.

6.4 *Segment 4: Provider/Practitioners*—This information should be repeated as necessary to document each provider and practitioner who responded at the scene or en route.

6.4.1 *Provider Number*— State specific identifier for an EMS agency that responds to the patient at the scene. (EMS No. 24; Appendix X1, 14001.B006)

6.4.1.1 *Provider Type*— Type of EMS agency unit that responds:

Non-transporting EMS Responder
Transporting EMS Responder (DEEDS 4.04)

6.4.1.2 *Provider Vehicle Number*—EMS agency specific number to identify vehicle that responds to the patient at the scene. (EMS No. 24; DEEDS 4.03; Appendix X1, 14001.B0065)

6.4.2 *Practitioner Number*—State specific personnel certification/license number for a crew member. (EMS Nos. 26, 27, 28; Appendix X1, 14001.B011)

6.4.2.1 *Practitioner Type*—Type of personnel certification/license level for EMS crew member. (EMS Nos. 29, 30, 31; Appendix X1, 14001.B011.01):

First responder
EMT basic
EMT intermediate
EMT paramedic
Nurse
Physician
Other health care professional
None of the above
Unknown

6.4.2.2 *Practitioner Status*—Coded value to indicate the role of the crew member in caring for the patient:

Driver
Chief/in charge
Assistant
Other

6.4.3 *EMS Practitioner ID Who Performs EMS Procedure/Therapy*—Identification number for practitioner who performs a procedure. This number is linkable to a master file that contains descriptive information about the practitioner. (Appendix X1, 14001.B011.02)

6.5 *Segment 5—Problem List*:

6.5.1 *Preexisting Conditions*—Coded values determined by EMS to indicate preexisting medical conditions known to the care provider (EMS No. 51, Appendix X1, 08075.17):

Asthma	Hypertension
Cancer	Psychiatric problems
Chronic renal failure	Seizure/convulsions
Chronic respiratory failure	Tracheostomy
Diabetes	Tuberculosis
Emphysema	

6.5.1.1 *Date of History*— Date of health history. (Appendix X1, 08075)

6.5.2 *Allergies*—Allergies suffered by the patient that will affect the course of emergency treatment. (included in EMS No. 50 Provider Impression list; Appendix X1, 08088)

6.6 *Segment 6: Immunization*.

6.7 *Segment 7—Exposure to Hazardous Substances*:

6.7.1 *Exposure to Hazardous Materials*—Coded values to indicate type of hazardous materials to which patient was exposed (Appendix X1, 07001)

6.8 *Segment 8: Family/Prenatal/Cumulative Health/Medical/Dental Nursing History*.

6.9 *Segment 9: Assessments/Exams*.

6.10 *Segment 10: Care/Treatment Plans and Orders*.

6.11 *Segment 11: Diagnostic Tests*.

6.12 *Segment 12—Medications*:

6.12.1 *Current Medications Taken by Patient*—Coded value to indicate medications or potential toxic materials as reported by the patient taken during the last 24 h that may affect the course of emergency treatment. (Appendix X1, 08083)

6.12.2 *EMS Medication/Material Name*—Name of medication provided to patient by EMS practitioner as coded according to groupings used in the American Hospital Formulary Service (1993), nonprescription medications, or unorthodox treatments that may have an adverse effect on the patient. (EMS No. 80; Appendix X1, 12001.06):

Acetaminophen	Ipecac
Adenosine	Isoproterenol
Albuterol	Lidocaine
Amyl nitrate	Lorazepam
Aspirin	Magnesium sulfate
Atropine	Mannitol
Bretylium tosylate	Meperidine
Bumetanide	Metaproterenol
Calcium chloride	Methylprednisolone
Calcium gluconate	Metoclopramide
Charcoal, activated	Morphine
Dexamethasone	Naloxone
Dextrose and water (50 %)	Nifedipine
Diazepam	Nitroglycerin
Diphenhydramine	Procainamide
Dopamine	Sodium bicarbonate
Epinephrine	Succinylcholine
Furosemide	Terbutaline
Glucagon	Thiamine
Heparin	Verapamil

6.12.3 *Dosage of EMS Medication/Material*—The medication dose at each administration. Enter a number >0. (Appendix X1, 12001.30)

6.12.4 *EMS Medication Route*—The route by which the medication is administered. The following table of medications (HL7, Version 2.3, Table 0162, Route of Administration) is recommended. (Appendix X1, 12001.39):

Description	
Apply externally	Mucous membrane
Buccal	Nasal
Dental	Nasogastric
Epidural	Nasal prongs
Endotracheal tube	Nasotracheal tube
Gastronomy tube	Ophthalmic
Genitourinary irrigant	Otic
Immerse body part	Other/miscellaneous
Intraarterial	Perfusion
Intrabursal	Oral
Intracardiac	Rectal
Intracervical (uterus)	Rebreather mask
Intradermal	Soaked dressing
Inhalation	Subcutaneous
Intrahepatic artery	Sublingual
Intramuscular	Topical
Intranasal	Tracheostomy
Intraocular	Transdermal
Intraperitoneal	Translingual
Intrasynovial	Urethral
Intrathecal	Vaginal
Intrauterine	Ventimask
Intravenous	Wound
Mouth	

6.13 *Segment 13: Scheduled Appointments/Events*—Not applicable for this phase.

6.14 *Segment 14—Encounters/Episodes*:

Segment 14: Encounters/Episodes—Administrative/Diagnostic Summary

6.14.1 *Estimated/Reported Age*—The patient's age as reported by the patient or estimated by the care provider. Age is not included in the EMDS or DEEDS data sets but it is very important for EMS when the patient's date of birth is not available. (EMS No. 41, Appendix X1, 14001.A106)

6.14.2 *EMS Pick-up Address*—Address (or best approximation) where patient was found, or, if no patient, address to which unit responded. Street address, other designation (for example, apartment number), city, state/province, zip/postal code, country, type of address (permanent, mailing), other geographic designation (for example, catchment area ID), county/parish, census tract. (EMDS; EMS Nos. 1–4; Appendix X1, 14001.A036)

6.14.3 *Location Type/Scene Description*—Type of location where the emergency event occurred coded in terms of the ICD-10 place of occurrence codes (WOO-Y34 except Y06 and Y07). (EMS No. 5; DEEDS 5.05; Appendix X1, 14001.B010):

Home
Residential institution
School, other institution and public administrative area
Sports and athletic area
Street and highway
Trade and service area
Industrial and construction area
Farm
Other specified place
Unspecified place

6.14.4 *Onset Date/Time*— Date and time when the injury occurred or the date and time of the onset of the acute illness that is most responsible for precipitating the patient's ED visit. (EMS Nos. 6–7; DEEDS 5.02; Appendix X1, 14001.A027):

YYYYMMDD HHMM

6.14.5 *Date/Time Incident Reported*—Date the call is first received by a public safety answering point (PSAP) or other designated entity. (EMS Nos. 8–9; Appendix X1,

14001.B0001):

YYYYMMDD HHMM

6.14.6 *Time Dispatch Notified*—Time of first connection with EMS dispatch. (EMS No. 10, Appendix X1, 14001.B0002):

HHMM

6.14.7 *Incident Number*— Unique number statewide for each incident reported to dispatch. (EMS No. 21)

6.14.7.1 This number should be unique, if possible, within a state or region. If this is not possible, it must be unique within an agency, and then by combining it with a unique agency number, it will be possible to construct a unique identifying number for the incident.

6.14.8 *Date/Time EMS Unit Notified*—Time response unit is notified by EMS dispatch. (EMS Nos. 11–12; Appendix X1, 14001.B0002):

YYYYMMDD HHMM

6.14.9 *Time EMS Unit Responding*—Time that the response unit begins physical motion. (EMS No. 13):

HHMM

6.14.10 *Time of EMS Arrival at Scene*—Time EMS unit stops physical motion at scene (last place that the unit or vehicle stops prior to assessing the patient). (EMS No. 14; Appendix X1, 14001.B003):

HHMM

6.14.11 *Time of EMS Arrival at Patient*—Time response personnel establish direct contact with patient. (EMS No. 15):

HHMM

6.14.12 *Time EMS Unit Left Scene*—Time when the response unit began physical motion from scene. (EMS No. 16; Appendix X1, 14001.B0004):

HHMM

6.14.13 *Time of EMS Arrival at Destination*—Time when the patient arrives at destination or transfer point. (EMS No. 17; Appendix X1, 14001.B0005):

HHMM

6.14.14 *Time EMS Back in Service*—Time response unit back in service and available for response. (EMS No. 18; Appendix X1, 14001.B0006):

HHMM

6.14.15 *Service Type*— Type of scheduled or unscheduled service requested. (EMS No. 20):

Scene
Unscheduled interfacility transfer
Scheduled interfacility transfer
Standby
Rendezvous
Not applicable
Unknown

6.14.16 *Patient Care Record Number*—Unique number statewide for each patient care record (PCR). (EMS No. 23; Appendix X1, 14001.B0051):

6.14.16.1 Unique number for each patient treated by EMS. Ideally, this number should be unique within a state or region. If unique within a state, this number could also be the incident number and response number.

6.14.17 *Highest Available Level of Care*—This is a variable derived by the computer after comparing crew member identification with licensure information on a master list to indicate highest capability level, for example EMS, paramedic, for crew members on the run:

EMT basic
EMT intermediate
EMT paramedic
Nurse
Physician
Other health care professional
Unknown

6.14.18 *Cause-of-Injury Code (E-code)*—The cause-of-injury code (E-code) is used to indicate the external cause of the injury, poisoning, or adverse effect related to the current emergency. E-codes are assigned according to the subset of the E codes in ICD-9 that are appropriate for use in the field. When possible, the codes should be assigned to indicate what went wrong, what the patient was doing at the time, if any products were involved, and the relationship of the assailant to the victim if an assault occurred or what evidence exists to indicate self-intent, or both. (EMS No. 49; DEEDS 5.04; Appendix X1, 14001.A033):

Motor vehicle traffic accident
Pedestrian traffic accident
Motor vehicle non-traffic accident
Bicycle accident
Water transport accident
Aircraft related accident
Accidental drug poisoning
Accidental chemical poisoning
Accidental falls
Fire and flames
Smoke inhalation
Excessive heat
Excessive cold
Venomous stings (plants, animals)
Animal bites
Lightning
Drowning
Mechanical suffocation
Machinery accidents
Electrocution (non-lightning)
Radiation exposure
Firearm self inflicted (intentional)
Rape
Firearm assault
Stabbing assault
Child assaults
Firearm injury (accidental)
Other
Not applicable
Unknown

6.14.19 *Cause-of-Injury Code Status*—Coded value to indicate if the designated E-code is the principal cause of the injury or a contributing cause. (Appendix X1, 14001.A170.01)

Segment 14: Encounters/Episodes—Chief Complaint/ Present Illness/Injury

6.14.20 *Chief Complaint*— Patient narrative indicating chief complaint and reasons why patient requested emergency care. (EMS No. 48; Appendix X1, 14001.A023/14001.A016)

6.14.21 *Signs and Symptoms Present*—Signs and symptoms reported to or observed by care provider. (EMS No. 52; Appendix X1, 14001.B012):

Abdominal pain
Back pain
Bloody stools
Breathing difficulty
Hypertension
Hypothermia
Nausea
Paralysis

Cardio respiratory arrest
Chest pain
Choking
Diarrhea
Dizziness
Ear pain
Eye pain
Fever/Hyperthermia
Headache
Palpitations
Pregnancy/childbirth/miscarriage
Seizures/convulsions
Syncope
Unresponsive/unconscious
Vaginal bleeding
Vomiting
Weakness (malaise)

6.14.22 *Systolic Blood Pressure*—Patient's systolic blood pressure. (EMS No. 70; Appendix X1, 14001.B012.01):

(systolic blood pressure)
Not obtained
Unknown

6.14.23 *Diastolic Blood Pressure*—Patient's diastolic blood pressure. (EMS No. 71; Appendix X1, 14001.B012.01):

(diastolic blood pressure)
Not obtained
Unknown

6.14.24 *Pulse Rate*—Patient's palpated or auscultated pulse rate expressed in number per minute. (EMS No. 65; Appendix X1, 14001.B012.01):

(pulse rate)
Not obtained
Unknown

6.14.25 *Respiratory Rate*— Unassisted patient respiratory rate expressed as number per minute. (EMS No. 68; Appendix X1, 14001.B012.01):

(respiratory rate)
Not obtained
Unknown

6.14.26 *Respiratory Effort*—Coded values indicating the patient's respiratory effort. (This field is essential for children 18 years or less.) (EMS No. 69; Appendix X1, 14001.B012.01):

Normal
Increased, not labored
Increased and labored, or, decreased and fatigued
Absent
Not assessed

6.14.27 *Skin Perfusion*— Coded values indicating the patient's skin perfusion, expressed as normal or decreased. (This field is essential for children 18 years or less.) (EMS No. 72; Appendix X1, 14001.B012.01):

Normal
Decreased
Not assessed

6.14.28 *Pulse Oximetry*— Oximetry reading indicating level of oxygen saturation. (Appendix X1, 14001.B012.01)

6.14.29 *Apgar*—Coded values to measure newborn's responses after birth. (Appendix X1, 14001.B012.01)

6.14.30 *Glasgow Eye-Opening Component*—Patient's eye-opening component of the Glasgow coma scale. (EMS No. 73; DEEDS 4.14; Appendix X1, 14001.B012.01):

Best eye-opening response (all ages):
None
Opens eyes in response to painful stimulation
Opens eyes in response to verbal stimulation
Opens eyes spontaneously
Not assessed
Unknown

6.14.31 *Glasgow Verbal Response Component*—Patient's verbal response component of the Glasgow coma scale. (EMS No. 74; DEEDS 4.15; Appendix X1, 14001.B012.01):

Best verbal response for adult and older child:
None
Non-specific sounds
Inappropriate words
Confused conversation or speech
Oriented and appropriate speech
Not assessed
Unknown

Best verbal response for infant and young child; (values for EMS No. 74 are separated for patients 2–5 years and 0–23 months)
None
Moans to pain
Cries to pain, screams to pain
Irritable cries
Coos and babbles
Not assessed
Unknown

6.14.32 *Glasgow Motor Component*—Patient's motor component of the Glasgow coma scale. (EMS No. 75; DEEDS 4.16; Appendix X1, 14001.B012.01):

Best motor response for adults:
None
Extensor posturing in response to painful stimulation
Flexor posturing in response to painful stimulation
General withdrawal in response to painful stimulation
Localization of painful stimulation
Obeys commands with appropriate motor response
Not assessed
Unknown

Best motor response for infant and child:
None
Abnormal extension (decerebrate)
Abnormal flexion (decorticate)
Withdraws to pain
Withdraws to touch
Normal spontaneous movement
Not assessed
Unknown

6.14.33 *Glasgow Coma Score (GCS)*—Sum total of values for the Glasgow eye-opening and verbal and motor responses components. This score will be calculated by the computer at the time the components are entered. (EMS No. 76; Appendix X1, 14001.B012.01)

6.14.33.1 *Date-Time GCS Measured*—See Appendix X1, 14001.B012.02):

YYYYMMDD HHMM

6.14.34 *Revised Trauma Score (RTS)*—Sum total of values for the respiratory rate, systolic blood pressure, and Glasgow coma score components. This score will be calculated by the computer at the time the components are computerized. (EMS No. 77; Appendix X1, 14001.B012.01)

6.14.34.1 *Date-Time RTS Measured*—See Appendix X1, 14001.B012.02:

YYYYMMDD HHMM

6.14.35 *Time of Witnessed Cardiac Arrest*—Time of witnessed cardiac arrest. (EMS No. 61; Appendix X1, 14001.B012.02):

HHMM

6.14.36 *Witness of Cardiac/Respiratory Arrest*—Coded value to indicate the type of person who witnessed the cardiac/respiratory arrest. (EMS No. 62):

Bystander
EMS responder

Not applicable
Unknown

6.14.37 *Field Triage Criteria Implemented*—Coded values to indicate the field triage criteria implemented. (Appendix X1, 14001.B005/14001.B016)

Segment 14: Encounters/Episodes—Progress Notes/ Clinical Course

6.14.38 *Injury Description*—A brief description to indicate the clinical description of injury type and body site (as defined to calculate the Injury Severity Score ISS) to be organized as a matrix to indicate the type and area of injury for data collection at the scene. (EMS No. 53; DEEDS 5.03; Appendix X1, 14001.A043)

6.14.39 *Injury Intent*— Coded values to indicate the intent of the individual inflicting the injury. (EMS No. 54; DEEDS 5.07; Appendix X1, 1, 14001.A033):

Unintentional
Intentionally self-inflicted, confirmed
Intentionally self-inflicted, suspected
Assault, confirmed
Assault, suspected
Legal intervention (injury inflicted by police or other authorities during law enforcement)
Undetermined

6.14.40 *Safety Equipment*— Safety equipment in use or deployed by the patient at time of the injury (airbag, belts, helmet, etc.) (EMS No. 55; DEEDS 5.08; Appendix X1, 14001.A044):

Shoulder belt
Lap belt
Seat belt, not otherwise specified
Driver's side air bag
Passenger's side air bag
Front air bag, not otherwise specified
Side air bag, not otherwise specified
Air bag, not otherwise specified
Child safety seat
Helmet
Eye protection
Protective clothing
Personal flotation device
Other protective gear

6.14.41 *Suspected Alcohol/Drug Use*—Suspected alcohol or drug use by patient at the time of the emergency. (EMS No. 57; Appendix X1, 14001.B012):

Alcohol, yes
Drugs, yes
Alcohol/drugs, yes
No
Not applicable
Unknown

6.14.42 *Narrative*—A narrative describing the unique aspects of this patient's emergency, treatment and disposition not recorded elsewhere. (Appendix X1, 14001.A060)

6.14.43 *Care Provider Impression*—Coded values indicating the care provider's clinical impression which led to the management given to the patient (treatments, medications, procedures). (EMS No. 50; Appendix X1, 14001.B012)

Abdominal pain / problems
Airway obstruction
Allergic reaction
Altered level of consciousness
Behavioral / psychiatric disorder
Cardiac arrest
Cardiac rhythm disturbance
Chest pain / discomfort
Diabetic symptoms (hypoglycemia)
Electrocution
Hyperthermia
Hypothermia
Hypovolemia / shock
Inhalation injury (toxic gas)
Obvious death
Poisoning / drug ingestion
Pregnancy / OB delivery
Respiratory arrest
Respiratory distress
Seizure
Sexual assault / rape
Smoke inhalation
Stings / venomous bites
Stroke / CVA
Syncope / fainting
Traumatic injury
Vaginal hemorrhage
Other
Not applicable
Unknown

Segment 14: Encounters/Episodes—Therapies

6.14.44 Therapies as defined by Practice E1384 are not performed during the prehospital phase at the scene of the emergency.

Segment 14: Encounters/Episodes—Procedures

6.14.45 *Procedure/Therapy Name*—Coded value to identify the procedure/therapy performed. The values below will be updated to match ICD-10 PCS which will be the unified procedural terminology recommended by the National Center for Vital Health Statistics in November 1993 and due from the Centers for Medicare and Medicaid Services. (EMS No. 78; Appendix X1, 14001.B001):

Assisted ventilation (positive pressure)
Backboard
Bleeding controlled
Burn care
Cardiopulmonary resuscitation
Cervical immobilization
Cricothyrotomy
ECG monitoring
Endotracheal intubation
External cardiac massage
External defibrillation (includes auto)
Intravenous catheter
Intraosseous catheter
Intravenous fluids
MAST (military antishock trousers)
Nasopharyngeal airway insertion
Nasogastric tube insertion
Obstetrical care (delivery)
Oropharyngeal airway insertion
Oxygen by mask
Oxygen by cannula
Splint of extremity
Traction splint

6.14.45.1 *Procedure/Therapy Performed by*—Coded value to identify who performed the procedure/therapy. Usually this documentation is required only for those procedures considered invasive or related to advanced life support. (Appendix X1, 14001.B011.02)

6.14.46 *Total Procedure/Therapy Attempts*—Total number of attempts for each procedure attempted, regardless of success. (EMS No. 79)

6.14.47 *Date-Time of Procedure*—Report date and time for each procedure/therapy listed. (Appendix X1, 14001.B001.01):

YYYYMMDD HHMM

6.14.48 *Materials Used*— Coded values to indicate materials used to perform the procedure/therapy listed. (Appendix X1, 14001.E001.75)

6.14.49 *Time of First CPR*—Best estimate of time of first CPR. (EMS No. 58; Appendix X1, 14001.B012.02):

HHMM

6.14.50 *Provider of First CPR*—Coded value to indicate the type of person who performed first CPR on patient. (EMS No. 59; Appendix X1, 14001.B011.02):

Bystander
EMS responder
Not applicable
Unknown

6.14.51 *Time CPR Discontinued*—Time at which medical control or responding EMS unit terminated resuscitation efforts (chest compressions and CPR) in the field. (EMS No. 60; Appendix X1, 14001.B012.02):

HHMM

6.14.52 *Time of First Defibrillatory Shock*—Time of first defibrillatory shock. (EMS No. 63; Appendix X1, 14001.B012.02):

HHMM

6.14.53 *Return of Spontaneous Circulation*—Whether a palpable pulse or blood pressure was restored following cardiac arrest and resuscitation in the field. (EMS No. 64; Appendix X1, 14001.B012):

Yes
No
Not applicable

6.14.54 *Initial Cardiac Rhythm*—Initial monitored cardiac rhythm as interpreted by EMS personnel. (EMS No. 66; Appendix X1, 14001.B012.01):

Sinus rhythm
Other rhythm from 60-100 (Not otherwise listed)
Paced rhythm
Bradycardia
Extrasystoles
Narrow complex tachycardia
Wide complex tachycardia
Ventricular fibrillation
Asystole
Pulseless electrical activity
Not applicable
Unknown

6.14.55 *Rhythm at Destination*—Monitored cardiac rhythm upon arrival at destination (EMS No. 67; Appendix X1, 14001.B012.01):

Sinus rhythm
Other rhythm from 60-100 (Not otherwise listed)
Paced rhythm
Bradycardia
Extrasystoles
Narrow complex tachycardia
Wide complex tachycardia
Ventricular fibrillation
Asystole
Pulseless electrical activity
Not applicable
Unknown

6.14.56 *Serum Glucose*— Patient's blood sugar level. (Appendix X1, 14001.B012.01)

6.14.56.1 *Date-Time Serum Glucose Measured*—See Appendix X1, 14001.B012.02.

Segment 14: Encounters/Episodes—Disposition

6.14.57 *Destination Determination*—Coded values identifying the person determining the reason for the transport destination.

6.14.58 *Destination Determination*—Reason a transport destination was selected. (EMS No. 45):

Closest facility (none below)
Patient/family choice
Patient physician choice
Managed care
Law enforcement choice
Protocol
Specialty resource center
On-line medical direction
Diversion
Other
Not applicable
Unknown

6.14.59 *Destination/Transferred to*—Health care facility or pre-hospital unit/home that received patient from EMS responder providing this record. Facilities should be recorded by identification numbers which are unique statewide. (EMS No. 44; Appendix X1, 14001.F080):

Home
Police/jail
Medical office/clinic
Other EMS responder (ground)
Other EMS responder (air)
Hospital
Morgue
Not applicable

6.14.60 *Incident/Patient Disposition*—End result of EMS response. This will provide information about the reasons for which EMS is notified, correlated with the ultimate incident disposition. (EMS No. 47; Appendix X1, 14001.F050):

Treated, transported by EMS
Treated, transferred care
Treated, transported by private vehicle
Treated and released
No treatment required
Patient refused care
Dead at scene
Canceled
Not applicable
Unknown
No patient found

6.14.61 *Condition on Arrival at Destination*—Coded values to indicate the patient's condition on arrival at the hospital. (Appendix X1, 14001.F066)

Segment 14: Encounters/Episodes—Charges

6.15 *Sources of Emergency Data Related to Pre-hospital Emergency Care to be Included in or Linked to the Electronic Health Record*:

6.15.1 *EMS Patient Care Record*—An EMS record is initiated for each patient transported by an EMS service. EMS services include first responder, basic life support, advanced life support, air transport, other transport, and transfer. The data collected by the EMS record are described in Guide F1629.

6.15.2 *Police Crash Data*—The police crash data set describes the time of onset, the characteristics of the crash, the type of vehicles involved, the behavior of the occupants in terms of their utilization of protective devices, and the speed of the police response. All of these factors influence patient outcome. The data set as a whole may be linked retrospectively to injury records to evaluate medical and financial outcomes for victims of motor vehicle crashes. However, the computer-based patient record needs only the crash data that have a bearing on decisions related to choosing the most appropriate medical treatment.

6.15.3 *Poison Control*— The poison control data include information about the time, type, mode, form, name, and amount of poison ingested.

6.15.4 *Person-specific Uniform Crime Record*—Police crime data include information about time and the type of weapon used.

6.15.5 *Emergency Medical History Storage System (Medic Alert, etc.)*—Patients with unstable chronic conditions which may become emergencies (diabetes, cardiac, etc.) may store